Business Connectivity Market Review:

Leased lines charge controls and dark fibre pricing

Redacted version ✂

Consultation

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About this document

This document is a consultation containing our proposals for regulating BT's charges for its wholesale leased line services. Our proposals form part of Ofcom's Business Connectivity Market Review.

On 15 May 2015, we published a consultation on the Business Connectivity Market Review which sets out our provisional analysis of competition in the provision of leased lines services. In that document, we propose to find that BT has significant market power in some business connectivity markets. We also propose regulation to address the competition problems identified, including remedies to address the risk of excessive pricing.

We are now consulting here on the details of these pricing remedies. Our proposals include charge controls for leased lines services and guidance for the pricing of dark fibre. The proposed regulation is designed to promote competition and further the interests of consumers.

Leased lines are high-quality, dedicated, point-to-point data transmission services used by businesses and providers of communications services. As well as being essential components of many businesses' communications systems, they are also essential to support the provision of mobile telephone and fixed residential broadband services.

We will take responses to this consultation into account before reaching our final conclusions and publishing our statement in early 2016.

Contents

Section 1

Summary

Overview

1.1 This consultation document forms part of the Business Connectivity Market Review (BCMR) and contains Ofcom's specific pricing proposals for BT, including charge controls for certain leased lines services and guidance for the pricing of dark fibre.[1]

1.2 Leased lines provide dedicated transmission capacity, generally over fibre optic cables, between fixed locations. They are important components of business Information and Communications Technology (ICT) services, particularly those used by large multi-sited enterprises and Government organisations. They also play a significant role in delivering fixed and mobile broadband services to consumers, as communications providers (CPs) use them extensively in their networks, particular for backhaul.

1.3 Most modern leased lines use Ethernet technology, and some very high bandwidth services use wavelength-division multiplex (WDM) technology, which allows a single fibre to carry multiple services simultaneously. Some older services provide either an analogue interface or digital time-division multiplex (TDM) interfaces, using legacy equipment. In this document, we refer to the legacy services as Traditional Interface (or TI).

1.4 On 15 May 2015 we published the Business Connectivity Market Review Consultation (May 2015 BCMR Consultation) in which we set out our analysis of competition in the provision of leased lines services in the UK.[2] The May 2015 BCMR Consultation sets out our provisional findings that BT has significant market power (SMP) in three wholesale leased lines markets,[3] and our proposals to impose SMP conditions on BT to address the competition problems identified in the markets in which it has SMP, including conditions to address the risk of excessive pricing.

1.5 Separately we are publishing the June 2015 Cost Attribution Review which sets out our review of BT's current set of cost attribution rules and our proposed changes to these rules. As a result of our cost attribution review, we are also proposing a number of adjustments to BT's costs for leased lines in this consultation.

Summary of our charge control proposals

1.6 We are proposing to impose a series of restrictions on BT's charges through the control period 1 April 2016 to 31 March 2019. The combined approach of our

[1] In Section 9 of the May 2015 BCMR Consultation, we have proposed a Dark Fibre Access obligation, which requires BT to provide other CPs with unlit optical fibre circuits, enabling them to provide leased line services using their own electronic equipment.
[2] Ofcom, *Business Connectivity Market Review, Review of competition in the provision of leased lines, Consultation,* 15 May 2015, http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/ (May 2015 BCMR Consultation).
[3] The wholesale market for low bandwidth Traditional Interface Symmetric Broadband Origination (TISBO) in the UK excluding the Hull area, at bandwidths up to and including 8Mbit/s; the wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the London Periphery; and the wholesale market for CISBO in the Rest of the UK excluding the Hull area.

proposed starting charge adjustments and our CPI-X price caps is intended to align BT's charges for these services with costs by the end of the control period.

1.7 We are proposing significant reductions to both BT's Ethernet and TI charges. Our proposals for the Ethernet and TI charge control baskets reflect that BT's returns in these markets are significantly in excess of its cost of capital. We have carried out an analysis of BT's financial performance to understand what has caused the difference between these returns and the forecast profitability in the previous control. We have identified that this profitability is caused by a number of factors, of which changes to the accounting treatment of business connectivity services have had the largest impact. We are proposing to make a number of changes to the 2016 leased lines charge control (2016 LLCC) that should address BT's profitability going forward, including making starting charge adjustments.

1.8 The new charge controls that we propose for leased lines services are set out in Table 1.1 below.

1.9 Our proposed charge controls cover wholesale TI services at bandwidths up to and including 8Mbit/s; wholesale Ethernet services at bandwidths up to and including 1Gbit/s; and interconnection, accommodation and ancillary services, including Excess Construction Charges (ECCs)[4] and Time Related Charges (TRCs) .[5] [6]

1.10 For TI, Ethernet and TRCs services we are proposing to impose reductions in BT's charges on 1 April 2016, i.e. starting charge adjustments. Second, for the period from 2 April 2016 to 31 March 2019, we are proposing to control BT's TI, Ethernet, TRCs, ECCs and Accommodation services through a series of CPI-X price caps. This means that BT will be required to ensure that its charges do not increase by more than CPI minus the value of X in each year of the control. We place further restrictions on BT's flexibility in implementing the starting charge changes and the charge controls through a series of sub-baskets and sub-caps.

[4] ECCs are charges levied by BT in some cases where it needs to extend its network to an end user's premise.
[5] TRCs are levied for services such as fault repair and providing or rearranging services where the work is not covered within Openreach's terms of service.
[6] As set out in the May 2015 BCMR Consultation, we are also proposing a safeguard cap charge control for WDM and Ethernet services at bandwidths above 1Gbit/s.

Table 1.1: Summary of the proposed controls and starting charge adjustments

Overall cap (value of X)	Additional sub-caps and sub-baskets	BT product name to which sub-cap or sub-basket applies[7]	Starting charge adjustment	Starting charge adjustment - sub-caps and sub-baskets
Ethernet basket				
CPI-13.75%[8]	1Gbit/s Ethernet product variant which does not require collocation at a BT main fibre exchange (CPI-13.75%)	1Gbit/s EAD[9]	-9%	1Gbit/s EAD (-9%)
	EAD distance related charges (where applicable)[10] (CPI-13.75%)	EAD Main link		Main link (-9%)
	Interconnect charges levied on CPs to connect to BT network (CPI-13.75%)	Bulk Transport Link (BTL)		Interconnect (-9%)
	Sub-cap on all charges (CPI-CPI)	All Ethernet Services		
TI basket				
CPI-12.25%	2Mbit/s services used by mobile operators for mobile site connectivity (CPI-12.25%)	2Mbit/s Radio Backhaul Services (RBS), NetStream 16 Longline and SiteConnect	-7.75%	2Mbit/s RBS, NetStream 16 Longline and SiteConnect (-7.75%)
	Sub-cap on all charges (CPI-CPI)	All TI services		
Accommodation services i.e. to rent space in BT exchanges				
CPI-0% on each charge	None	Accommodation services	None	None
Excess construction charges (ECCs)				
GBCI-0%[11] **on Contractor ECCs**	None	Construction activities that Openreach provides through an external contractor	None	None
CPI-21% for blown fibre		Fibre installation using blown fibre technique		
CPI+8.25% for cable		Installation of copper or fibre cables		
CPI+4.5% for blown fibre tubing in duct		Installation of blown fibre tubing in ducts		
CPI+7% for internal cabling		Internal cabling work		
CPI+5% for survey fee/planning charge		Survey fees and planning charges		
Ethernet Time Related Charges (TRCs)				
+0.2%	None	All Ethernet TRCs	Reduction to align charges with TRCs provided for wholesale local access	None

Source: Ofcom

[7] See Annex 15 for references to BT's product lists.
[8] Consumer Price Index (CPI).
[9] EAD stands for Ethernet Access Direct.
[10] An EAD charge has two components: a local access charge plus a distance related charge.
[11] General Building Costs Index (GBCI).

Summary of our charge control approach

1.11 The key proposals in relation to our charge control approach are:

- to apply a CPI-X form of control that will apply for a duration of three years;
- to adopt separate Ethernet and TI baskets;
- to make adjustments to BT's cost data to ensure that these are representative of the relevant level of costs on a forward-looking basis and in particular to make adjustments to reflect the analysis undertaken in the June 2015 Cost Attribution Review;
- to use efficiency assumptions of 5% for both the Ethernet and TI charge controls;
- to use a pre-tax nominal weighted average cost of capital (WACC) of 10.1% based on our proposed approach to further disaggregate the BT WACC;
- to make starting charge adjustments where BT's high margins, in relation to Ethernet and TI services, are driven by changes in cost attributions and accounting errors that move costs between regulated and unregulated markets; and
- to allow three year term products provided by BT to contribute towards compliance with its charge control obligations.[12]

1.12 Specifically in relation to the Ethernet basket our proposed approach also includes:

- allowing BT to recover its additional resource costs associated with improving its quality of service (QoS) but adjusting the level of allowed Service Level Guarantee (SLG) payments to reflect a level of payments we would expect to see given our proposed minimum QoS standards. The net effect of our approach is to reduce the level of QoS costs which we allow BT to recover from the charge control;
- using volume forecasts that take account of the proposed dark fibre remedy based on our assumptions on the extent to which dark fibre will cannibalise some of the active circuits forecast; and
- uplifting the forecast costs to take into account both the cannibalisation of active circuits by the proposed dark fibre remedy and the implementation and development costs of the proposed dark fibre remedy.

Summary of our guidance on dark fibre pricing

1.13 In the May 2015 BCMR Consultation, we propose to require BT to price Dark Fibre Access by reference to its EAD 1Gbit/s active products less the long run incremental costs (LRIC) of the active elements of those products.[13] That is, we propose to require BT to price its dark fibre product consistent with its EAD 1Gbit/s products, minus the costs it would avoid in the long-run from providing dark fibre rather than the EAD 1Gbit/s service.

[12] This is where a customer commits to purchasing a product from BT for a minimum of three years.
[13] Paragraphs 10.18 -10.35, May 2015 BCMR Consultation.

1.14 In this consultation we provide guidance on how we would anticipate calculating the costs that BT would avoid from providing dark fibre only, and in particular which costs we consider that BT would avoid and how these should be calculated.

Consultation and next steps

1.15 We invite comments on our proposals in this document by no later than 7 August 2015. The close of this consultation is intended to coincide with that of the May 2015 BCMR Consultation.

1.16 We intend to publish the cost models used to formulate our proposals by 22 June 2015.

Section 2

Introduction

The Business Connectivity Market Review

2.1 In our recent May 2015 BCMR Consultation, we set out our proposals for the regulation of leased lines in the UK from 1 April 2016, based on our review of competition in relevant markets.

2.2 In the May 2015 BCMR Consultation, we propose in particular:[14]

- that BT has significant market power (SMP) in three wholesale leased lines markets, namely:
  - the wholesale market for low bandwidth Traditional Interface Symmetric Broadband Origination (TISBO) in the UK excluding the Hull area, at bandwidths up to and including 8Mbit/s;
  - the wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the London Periphery (LP);
  - the wholesale market for CISBO in the Rest of the UK (RoUK) excluding the Hull area;
- to impose SMP conditions on BT to address the competition problems identified in markets in which it has SMP; and
- that such SMP conditions should include measures to address the risk of excessive pricing.

2.3 The measures we propose to address the risk of excessive pricing are:

- CPI+/-X charge controls for:
  - wholesale TI services at bandwidths up to and including 8Mbit/s in the UK excluding the Hull area;
  - wholesale Ethernet services at bandwidths up to and including 1Gbit/s in the LP and the RoUK excluding the Hull area; and
  - the interconnection, accommodation and ancillary services, including ECCs and TRCs, that BT supplies in connection with the wholesale TISBO and CISBO services in these markets, including services provided in connection with the proposed Dark Fibre Access remedy;
- a safeguard cap control for Wavelength Division Multiplex (WDM) services and Ethernet services at bandwidths above 1Gbit/s in the RoUK excluding the Hull area;

[14] Paragraphs 1.18 to 1.50, May 2015 BCMR Consultation.

- a condition requiring BT to ensure that the differences between EAD and EAD Local Access services reflect differences in long-run incremental costs; and

- a 'basis of charges' requiring BT to price Dark Fibre Access by reference to its EAD 1Gbit/s active products less the LRIC of the active elements of those products.

2.4 This consultation contains:

- our specific proposals for the charge controls for partial private circuits (PPCs), wholesale Ethernet services at bandwidths up to and including 1Gbit/s, interconnection, accommodation and ancillary services, including the scope, design, form and levels of the controls. These are covered in Sections 3 to 7;

- our detailed consideration and proposals concerning the form of the basis of charges condition for the proposed Dark Fibre Access remedy and our guidance concerning the costs to be included in the 'minus' element of the active-minus pricing calculation. These are covered in Section 8;

- our proposals concerning the form of the safeguard cap control for WDM and Ethernet services at bandwidths above 1Gbit/s;[15] and

- our proposals concerning the form of the condition for the EAD/EAD LA pricing differential.[16]

2.5 While this consultation has been published separately to the May 2015 BCMR Consultation, we reach our views on the proposed controls as part of our overall market analysis and proposals. This document does not reproduce all of that analysis or proposals, and should therefore be read in conjunction with the May 2015 BCMR Consultation.

June 2015 Cost Attribution Review

2.6 In addition, separately we are publishing the June 2015 Cost Attribution Review which will set out the analysis we have undertaken to review BT's current set of cost allocation rules. In this consultation, we will propose changes to some of BT's attribution methodologies, which adjust BT's costs for the purpose of setting the 2016 LLCC. Our 2015 LLCC Model[17] and therefore the proposals set out in this consultation rely on analysis undertaken by the June 2015 Cost Attribution Review. These adjustments are currently based on estimations and will be further developed following the publication of the June 2015 Cost Attribution Review.

Background to our charge control proposals

2.7 In the rest of this section we explain the background to our charge control proposals. In particular, we:

[15] Our rationale for this proposal was set out in paragraphs 8.188 to 8.195, May 2015 BCMR Consultation.
[16] Our rationale for this proposal was set out in paragraphs 10.18 to 10.35, May 2015 BCMR Consultation.
[17] The model published in conjunction with the June 2015 LLCC Consultation.

- start by recapping on some of the key characteristics of leased lines;[18]
- summarise the current leased line charge controls (the 2013 LLCC)[19] that we imposed on BT in 2013;
- set out the regulatory framework for imposing charge controls; and
- explain the consultation process.

The key characteristics of leased lines

2.8 Leased lines provide dedicated transmission capacity between fixed locations, and are essential components of Information and Communications Technology (ICT) services used by businesses.

2.9 Many organisations, both in the private and public sectors, use leased lines to support a wide variety of ICT applications, such as access to the internet, private voice and data networks, backup and disaster recovery, remote monitoring and telemetry applications.

2.10 Leased lines are also used by Communications Providers (CPs) as a key building block in their communications networks and hence support the consumer services provided by these CPs. For example, Mobile Network Operators (MNOs) use large volumes of leased lines to carry mobile voice and data traffic between their radio base stations and their switching centres, and providers of fixed broadband services use substantial volumes of leased lines to carry traffic between local aggregation points, such as BT's local exchanges, and their core networks.

2.11 In this consultation we consider leased lines that employ technologies in common use in the UK. We classify those technologies in three groups: those delivered using the legacy TI technology, those delivered using Contemporary Interface (CI) technology and those delivered using WDM technology.

- **TI leased lines:** This group includes services which use legacy analogue and digital interfaces. These have been the most common types of leased line used in the UK, but their volume is in sustained decline;
- **CI leased lines:** This group of digital leased line services uses interfaces, such as Ethernet, that are generally more suitable for transmission of Internet Protocol (IP) data, and are often more cost-effective in delivering high bandwidth services than legacy technologies. As set out in the May 2015 BCMR Consultation, CI leased lines also include leased lines that use WDM transmission technology;[20] and
- **WDM leased lines:** WDM is a transmission technology that supports multiple circuits over a single fibre or pair of fibres. WDM supports a wide range of

[18] A more detailed explanation of the characteristics of leased lines is set out in Section 3, May 2015 BCMR Consultation.
[19] Ofcom, *Business Connectivity Market Review, Review of retail leased lines, wholesale symmetric broadband origination and wholesale trunk segments, Statement,* 28 March 2013, http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/?a=0 (March 2013 BCMR Statement).
[20] Paragraphs 4.1 and 4.11-4.12, May 2015 BCMR Consultation.

interfaces but is most commonly used to provide circuits with Alternative Interface (AI) such as Ethernet or Fibre Channel.[21]

2.12 As noted above, in the May 2015 BCMR Consultation we also propose a Dark Fibre Access obligation. This would require BT to provide other CPs with unlit optical fibre circuits, enabling them to provide leased line services using the technologies discussed above using their own electronic equipment.

2.13 As we note in the May 2015 BCMR Consultation, the capacity demanded of leased lines has been increasing in recent years and seems set to continue to increase.[22] Businesses' need for bandwidth is being driven by a number of factors, including increased adoption of remotely hosted ICT applications (often referred to as 'cloud computing'), greater consumption of bandwidth hungry applications and video content, and increased reliance on the internet as a means of communicating and transacting with employees, customers and suppliers.

2.14 There has also been a shift in demand from legacy based leased lines to modern Ethernet and WDM services. This trend is forecast to continue over the course of the forthcoming charge control period.

The 2013 LLCC

2.15 In the March 2013 BCMR Statement, and also in previous reviews, we imposed charge controls on BT's leased lines services to address the risks of a price distortion that may give rise to adverse effects. In the March 2013 BCMR Statement we implemented charge controls with two separate service baskets for wholesale services:

- TI – covering low, medium and high bandwidth services outside the Western, Eastern, Central and East London Area (WECLA),[23] low bandwidth services within the WECLA and regional trunk services at all bandwidths; and
- Ethernet – covering Ethernet services at all bandwidths outside the WECLA.

2.16 In addition, we separately controlled ECCs, accommodation services and Ethernet services at bandwidths of up to and including 1Gbit/s inside the WECLA.

2.17 The current leased line charge controls came into effect from 1 April 2013 to 31 March 2016. Table 2.1 below summarises the 2013 LLCC.

[21] WDM technology can also support TI technology. Where a TI service is providing using WDM, it is considered to be part of the proposed CISBO market.
[22] Paragraphs 3.42 to 3.48, May 2015 BCMR Consultation.
[23] In the March 2013 BCMR Statement, we defined WECLA as a separate market for the provision of AI and WDM services, respectively.

Table 2.1: Summary of charge controls imposed on BT in the 2013 LLCC

	Services within scope	Value of X	Sub-baskets & Sub-caps[24]
TI basket	Connection and rental charges for: Wholesale low, medium and high bandwidth PPCs outside the WECLA Wholesale low bandwidth PPCs inside the WECLA Regional Trunk – all bandwidths – rental only RBS, NetStream 16 Longline and SiteConnect TI equipment and infrastructure TI ancillary services(excluding ECCs) Interconnection services	RPI+2.25%[25]	Point of Handover sub-basket (RPI-0%) RBS, NetStream 16 Longline and SiteConnect sub-basket (RPI+2.25%) Ancillary services, equipment and infrastructure sub-cap (RPI+2.25%) TI all services sub-cap (RPI+10%)
Ethernet basket	Connection and rental charges for: Ethernet services up to and including 1Gbit/s outside the WECLA Ethernet services above 1Gbit/s outside the WECLA Ethernet ancillary services (excluding ECCs) Interconnection services	RPI-11.5%	Interconnection services sub-basket (RPI-11.5%) EAD 1Gbit/s sub-basket (RPI-11.5%) Ethernet all services sub-cap (RPI-RPI)
ECCs[26]		GBCI-0% on each charge	
Accommodation services	Access Locate Administration Fee Cablelink	RPI-0% on each charge	
Ethernet services in the WECLA	Wholesale low bandwidth Ethernet services up to and including 1Gbit/s in the WECLA	RPI-RPI on each charge	
Retail Analogue basket	Rental charges	RPI+2.25%	Retail analogue sub-cap (RPI+10%)

Source: Ofcom

[24] A sub-basket control applied to the weighted average value of revenues of services within the basket. This is in contrast to a sub-cap which would apply to each charge.
[25] Retail price index.
[26] In a separate statement in 2014, we implemented a direction that allowed Openreach to exempt new provisions of EAD services from the first £2,800 of ECCs and to make up the resulting loss of its revenue with a balancing charge of £548, which would be part of the standard connection charge for all EAD services. See Ofcom, *Excess Construction Charges for Openreach Ethernet Access Direct, Directions affecting the operation of the Leased Lines Charge Control, Statement*, 16 May 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/excess-construction-charges/statement/excess-construction-charges-statement.pdf (May 2014 ECC Direction).

The regulatory framework[27]

2.18 Section 87(9) of the Act authorises the setting of certain forms of SMP conditions including:

- such price controls as we may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities;
- such rules as we may make in relation to those matters about the recovery of costs and cost orientation;
- such rules as we may make for those purposes about the use of cost accounting systems; and
- obligations to adjust prices in accordance with such directions given by us as we may consider appropriate.

2.19 Section 88 of the Act prohibits the setting of SMP conditions under section 87(9) of the Act except where:

- it appears to us, from the market analysis, that there is a relevant risk of adverse effects arising from price distortion;[28] and
- it appears to us that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on end users.

2.20 Section 88 also requires us to take into account the extent of BT's investment in the matters to which the condition relates.

2.21 Section 47 of the Act provides that we must not impose any SMP condition unless we are satisfied that it is:

- objectively justifiable in relation to the network, services, facilities or apparatus to which it relates;
- not such as to discriminate unduly against particular persons or against a particular description of persons;
- proportionate to what the condition is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

2.22 We also need to ensure that the proposed SMP conditions are consistent with our general duties under section 3 of the Act and our duties for the purpose of fulfilling our Community obligations as set out under section 4 of the Act.

[27] For a wider discussion of the regulatory framework see paragraphs 2.30-2.48 in Section 2, and Annex 14, May 2015 BCMR Consultation.
[28] A relevant risk of adverse effects arising from price distortion arises if the dominant provider might fix and maintain some or all of his prices at an excessively high level, or impose a price squeeze, such as to have adverse consequences for end-users.

2.23 Under section 3, our principal duty in carrying out functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition. In so doing, we are required to secure a number of specific objectives. These include securing the availability throughout the UK of a wide range of electronic communications services, which is particularly relevant to the markets we are reviewing, and therefore to the proposed regulation.

2.24 In performing our duties, we are also required to have regard to a range of other considerations, as appear to us to be relevant in the circumstances. In the May 2015 BCMR Consultation, we suggest that a number of such considerations are relevant to the market review, namely the desirability of promoting competition in relevant markets, the desirability of encouraging investment and innovation in relevant markets and the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.[29]

2.25 Section 4 of the Act requires us to act in accordance with the six Community requirements for regulation. In the May 2015 BCMR Consultation, we explain that the first, third, fourth and fifth of those requirements are of particular relevance to this market review, namely to promote competition in the provision of electronic communications networks and services and associated facilities; and to encourage, to such extent as Ofcom considers appropriate for certain prescribed purposes, the provision of network access and service interoperability, namely securing efficient and sustainable competition, efficient investment and innovation and the maximum benefit for customers of communications providers.[30]

2.26 We consider the application of each of the relevant legal tests under the Act to the proposed charge controls in Section 10 of this document.

EC recommendations and BEREC common positions

2.27 In accordance with section 4A of the Act, we must also take due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive.[31] For the proposals set out in this consultation, we have taken such account in relation to the Leased Lines Pricing Recommendation.[32] In addition, we have had regard to the BEREC Common Position on best practice in remedies imposed as a consequence of a position of SMP in the relevant markets for wholesale leased lines[33] which complements the

[29] Paragraph 8.33, May 2015 BCMR Consultation.
[30] Annex 14, paragraphs A14.38, May 2015 BCMR Consultation.
[31] EC, *Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services*, 24 April 2002 OJ L108/33, as amended by Directive 2009/140/EC and Regulation 544/2009, http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32002L0021 (Framework Directive).
[32] EC, *Commission recommendation of 29 March 2005 on the provision of leased lines in the European Union – Part 2 – pricing aspects of wholesale leased lines part circuits*, 1 April 2005, OJ L83/52, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32005H0268, and the accompanying Explanatory Memorandum (the Leased Lines Pricing Recommendation).
[33] BEREC, *Revised BEREC common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines*, 26 November 2012, BoR (12) 126, http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/common_approaches_positions/1096-revised-berec-common-position-on-best-practices-in-remedies-as-a-consequence-of-a-smp-position-in-the-relevant-markets-for-wholesale-leased-lines (BEREC Common Position).

general guidance given on choice of SMP remedies included in the ERG Revised Common Position.[34]

Impact assessment

2.28 The analysis presented in the rest of this consultation represents an impact assessment, as defined in section 7 of the Act.

2.29 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was proposed. They form part of best practice policy-making. This is reflected in section 7 of the Act, in accordance with which Ofcom generally has to carry out impact assessments where its proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of its policy decisions. For further information about our approach to impact assessments, see the guidelines, *Better policy-making: Ofcom's approach to impact assessment*, which are on our website: http://stakeholders.ofcom.org.uk/binaries/consultations/ia_guidelines/summary/condoc.pdf

Equality Impact Assessment

2.30 Ofcom is also required by statute to assess the potential impact of all our functions, policies, projects and practices on race, disability and gender equality. Equality Impact Assessments (EIAs) also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity. Unless we otherwise state in this document, it is not apparent to us that the outcome of our review is likely to have any particular impact on race, disability and gender equality. Specifically, we do not envisage the impact of any outcome to be to the detriment of any group of society.

2.31 Nor are we envisaging any need to carry out separate EIAs in relation to race or gender equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will affect all industry stakeholders equally and will not have a differential impact in relation to people of different gender or ethnicity, on consumers in Northern Ireland or on disabled consumers compared to consumers in general. Similarly, we are not envisaging making a distinction between consumers in different parts of the UK or between consumers on low incomes. Again, we believe that our intervention will not have a particular effect on one group of consumers over another.

[34] ERG, *Revised ERG Common Position on the approach to appropriate remedies in the regulatory framework for electronic communications and network services*, ERG (06) 33 http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=3&cad=rja&uact=8&ved=0CC4QFjAC&url=http%3A%2F%2Fpfs.is%2Fupload%2Ffiles%2Ferg_06_33_remedies_common_position_june_06.pdf&ei=xj5sVbS0KYSrgwSymoGACQ&usg=AFQjCNEUFKQ8Qiif2lM-NI7Z499e5n3ExA&sig2=wnVVHsSMDHsXP6tulZepng&bvm=bv.94455598,d.eXY (ERG Revised Common Position)

Consultation period and document structure

Consultation period

2.32 We invite views and comments from interested parties on our proposals contained in this consultation document by no later than 7 August 2015. Details of the manner in which interested parties should respond to this consultation are set out in Annex 1, and information about our consultation processes and principles in general are included in Annex 2. One of our consultation principles referred to in Annex 2 is that we normally consult for up to ten weeks depending on the impact of our proposals and, if we are departing from a principle, we will explain why.

2.33 We consider that we have set an appropriate period for consulting on these specific proposals, having regard to our general policy contained in our Consultation Guidelines of November 2007, which recognise that each consultation will be different depending on the type of industry issue and the type of people and organisations likely to take an interest.[35] We note that:

- the approach we have taken to structure the charge control is similar to the approach taken for the March 2013 BCMR Statement;
- as noted above, this consultation relates to the proposed remedies in the May 2015 BCMR Consultation on which we are consulting for 12 weeks;
- we have engaged with stakeholders in advance on the potential content and timing of our proposals;
- the analysis interested parties may wish to undertake will be supported by the publication of our non-confidential version of the 2015 LLCC Model; and
- while this consultation contains important policy proposals, many of them will be of interest to a limited number of stakeholders who will be aware of the issues.

2.34 The current charge controls expire at the end of March 2016 and we therefore need to conclude the project within a specified timetable, allowing sufficient time for us to carefully consider the responses we receive and then to consult with the European Commission, BEREC and national regulators in other member states. We would therefore welcome responses at the earliest opportunity, ahead of our consultation closing date if possible.

Document structure

2.35 The rest of this document is structured as follows:

- Section 3 outlines the form and duration of a charge control;
- Section 4 outlines the key economic principles that we propose to take into account in designing our proposed charge controls;
- Section 5 outlines the proposed approach that applies to both Ethernet and TI services

[35] Ofcom, *Ofcom Consultation Guidelines November 2007*, http://stakeholders.ofcom.org.uk/consultations/how-will-ofcom-consult

- Section 6 outlines the proposed charge controls for Ethernet services;
- Section 7 outlines the proposed charge controls for TI services;
- Section 8 outlines our proposals concerning the form of the basis of charges condition for the proposed Dark Fibre Access obligation and our guidance on costs to be included in the dark fibre pricing calculation;
- Section 9 outlines our proposed controls for Accommodation, ECCs and TRCs;
- Section 10 outlines how we propose to implement our proposals through the draft SMP conditions and legal tests; and
- Section 11 outlines the proposed regulatory requirements.

2.36 In addition there are a number of Annexes which support our main conclusions.

Section 3

Form and duration of the charge control

Introduction

3.1 This Section explains our proposed approach to determining the form of the leased lines charge controls and their durations for low bandwidth TI services in the UK excluding the Hull area, and wholesale Ethernet services at bandwidths up to and including 1Gbit/s in the LP and the RoUK excluding the CLA and Hull area.

3.2 In particular, we discuss:

- the reasoning behind our proposal that the main controls should take the form of an Inflation-X price cap, including our choice of the CPI as the relevant inflation index; and
- the reasons for proposing that the charge controls should last for a period of three years.

3.3 In addition to the low bandwidth TI and Ethernet charge controls, we also propose to control the charges of certain ancillary services, namely Accommodation, ECCs and TRCs. The form of these controls differs, in some aspects, to what we propose in this Section. We set out our proposals for ancillary services in Section 9.

We propose to apply Inflation-X charge controls

3.4 We propose the Inflation-X form of charge control for the leased lines services in question. This form of control has been tried and tested over many years for telecoms charge controls and is the same form of control as we adopted for the current charge control. It has a number of desirable properties, including that it gives BT incentives to enhance its efficiency and make efficient investments. This is an important consideration for us and something we must consider under section 88 of the Act.

3.5 Such a charge control entails forecasting the efficiency gains that BT might reasonably be expected to achieve and determining the maximum permitted price change for particular groups of services. In order to maintain its allowed profitability on these services, BT would have to make efficiency improvements to reduce its costs in line with the expected path set by the charge controls.

3.6 In addition, the Inflation-X form of charge control provides an incentive to make efficiency gains over and above those forecast as part of the control. If BT is able to deliver the required services at a lower cost than has been forecast, it can keep the profits resulting from these savings. In this way, an Inflation-X type of control provides incentives to ‘outperform’ the charge controls and improve efficiency over time. Customers also benefit in the longer term, as these additional efficiency gains can be shared through lower prices when the charge controls are reset.

3.7 The Inflation-X approach can also provide incentives for efficient investment. The level of the charge control is usually set to allow the firm to earn a reasonable rate of return (the cost of capital) if it is efficient, and a consistent approach can be taken over charge control periods to encourage such investment.

3.8 Despite the fact that such a form is tried and tested and currently applies for charge controlled leased lines services, we have also considered whether alternatives to the Inflation-X form of charge control might be appropriate in the current circumstances. In particular, we have considered whether the following forms might be more appropriate:

- 'cost-plus' regulation; or
- 'retail-minus' regulation.

3.9 As with Inflation-X regulation, cost-plus regulation would allow BT to recover costs plus an appropriate mark-up. Under this approach, charges are set equal to actual costs including a regulated rate of return in each year of the control. In theory, this would ensure that BT is able to recover the costs of provision of its services, while ensuring that customers are protected from prices being set well above costs.

3.10 The key concern often identified with a cost-plus control is that it has poor incentive properties, as BT would earn a similar return regardless of the operating conditions. In particular, BT would have limited incentives for cost minimisation, since any reductions in costs would be required to be passed on directly to customers. Therefore, while in theory it would be efficient for prices to reflect actual costs, there would not be an incentive to minimise those costs and bring them to efficient levels.[36] As noted above, under section 88 of the Act, we must only impose a price control that appears to us to be appropriate for the purpose of, among other things, promoting efficiency. We have therefore taken account of the potentially poorer incentive properties of cost-plus controls in making our choice of the appropriate form for the leased lines services in question.

3.11 Retail-minus regulation controls the margin between the wholesale charge and the relevant downstream retail prices, rather than the absolute level of charges. The aim of retail-minus regulation is to ensure that charges for wholesale services are set at a level which allows efficient operators to compete to offer retail services.

3.12 However, since the absolute level of wholesale charges would not be controlled, a retail-minus control would normally do little to prevent prices from rising above the competitive level.[37] As a result, we consider that a retail-minus based charge control on the leased lines services in question is less likely to be appropriate for the purpose of promoting sustainable competition. This is an important issue in addressing the competition problems we have identified and something that we must consider under section 88 of the Act in imposing any price controls.

3.13 We therefore believe that the Inflation-X form of charge control is likely to best meet our statutory objectives.

3.14 It should also be noted that in later sections of this consultation document we will also consider particular variants of the Inflation-X form of control that do not involve forecasting costs and setting prices according to these forecasts. We may propose this type of control where we believe that there is less risk of excessive pricing, but that some control on prices is still appropriate. For instance, we will consider setting

[36] See the discussion on allocative and dynamic efficiency below.
[37] For further discussion of the circumstances in which a retail-minus approach may be appropriate, see Annex C of Oftel, *Access to Bandwidth: Delivering Competition for the Information Age – Statement*, November 1999, http://www.ofcom.org.uk/static/archive/oftel/publications/1999/consumer/a2b1199.htm

'safeguard' caps of CPI-0% or CPI-CPI (no real increases in prices and no nominal increases in prices respectively) where we believe that this is the most appropriate means to achieve our specific policy objectives. These variants of the CPI-X charge control are most appropriate where we consider that protection and incentives for efficiency may already exist, but additional protection is appropriate, either for certain groups of customers, or in case market conditions change.[38]

The use of CPI as our benchmark for inflation

3.15 Inflation features in the setting of charge controls in two ways:

- first, to determine how the limit on prices is updated each year (e.g. in the form of RPI-X or CPI-X); and
- second, when setting a charge control based on forecast costs, the cost of inputs will typically be forecast to vary over time and the cost of different inputs will vary in different ways – e.g. pay related costs may vary differently from asset replacement costs.

3.16 In this Section we are concerned with the former, i.e. how we should index the price caps for the regulated services in question. The question of how the price of different inputs should be forecast to vary over time is addressed in Section 4 of this document.

3.17 The reason for using an inflation index in the charge control formula is to protect the regulated firm and customers from forecast error. If inflation rises by more than forecast, the Inflation-X formula protects the firm from the cap becoming tighter than intended. Similarly, if inflation rises by less than forecast, then customers do not pay more than necessary to compensate the firm for general inflationary pressures.

3.18 In the March 2013 BCMR Statement we decided that RPI was the appropriate index to use. However as a result of an announcement by the Office for National Statistics (ONS) in January 2013 that the RPI "*does not meet international standards and recommended that a new index be published*" we decided to consider afresh the use of RPI in our charge controls as a part of the June 2014 FAMR Statement.[39]

3.19 In the June 2014 FAMR Statement we considered RPI and CPI under a framework for identifying whether, in particular circumstances, a departure from the default inflation index might be appropriate.[40] We have used this framework again to assess the appropriateness of RPI and CPI for leased lines charge controls. In summary:

- official status: As we did for the June 2014 FAMR Statement and June 2014 WBA Statement[41] we consider that the ONS's conclusion that the RPI does not

[38] See Section 6 and 7 and, in particular, Section 9 (on our proposed control on Accommodation, ECCs and TRCs), where we consider applying these forms of control.
[39] Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 - Statement*, 26 June 2014, Volume 2, http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume2.pdf (June 2014 FAMR Statement).
[40] Paragraphs 3.110 to 3.164, Volume 2, June 2014 FAMR Statement.
[41] Ofcom, *Review of the wholesale broadband access markets: Statement on market definition, market power determinations and remedies*, 26 June 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/statement/WBA-Statement.pdf (June 2014 WBA Statement).

meet international standards and the subsequent declassification of the RPI as a National Statistic are relevant factors for us to take into account, even if it is the case that forecasters adjust for known biases in the RPI;

- cost causality: We consider an important part of the rationale behind indexing charge controls is to compensate for forecast error in how costs might evolve over time. To this end, the choice of index should take into account the extent to which the index reflects likely changes in the input costs of the regulated services. We have used both CPI and RPI estimates in our forecast of outturn operating costs and it is not clear whether the RPI or the CPI might better track total costs of providing leased lines services. We have estimated our operating cost inflation to be 2.5% per annum for pay and 2.6% per annum for non-pay over the period. This lies above forecasts of both the CPI and the RPI, although it is closer to the RPI. However we have kept asset prices flat in nominal terms (i.e. zero inflation). Capital costs (depreciation plus a return on mean capital employed) account for a sizable share of the total cost of the leased lines services we charge control.[42] Therefore, we believe that the net effect of our operating cost inflation and asset price assumptions will therefore be to produce an overall cost inflation assumption closer to the CPI;

- exogeneity: An important consideration is that the index cannot be influenced by the regulated firm or individual customers of that firm. Since the RPI and the CPI are both macroeconomic variables and are calculated by the ONS, each is exogenous to the actions of BT or its customers;

- availability of independent forecasts: We typically use forecasts of inflation that are compiled by an independent body. Since the RPI and the CPI are widely used in the UK economy, they are regularly forecast by analysts; and

- regulatory predictability: Regulatory predictability is important for dynamic efficiency. However, as we did for the June 2014 FAMR Statement and June 2014 WBA Statement we note that regulatory predictability does not mean doing the same thing at every market review. Instead, it requires that regulatory decisions are clearly reasoned, consulted on, and that stakeholders are given sufficient notice of changes to regulation.

3.20 Having compared the CPI and the RPI, we conclude that on balance, it would be more appropriate to use the CPI to index the main leased lines charge controls. There are few differences in the way that the two indices perform against most of the factors considered above, but in relation to 'official status' in particular, we consider that the CPI is preferable. Therefore, for the proposals set out in this consultation, we believe that CPI is the most appropriate inflation index to use for our main charge controls.

Duration of charge controls

3.21 The previous charge controls were set with a three year duration, and we propose to maintain this approach for the next charge controls.

[42] For example, section 5.1 of BT's 2013/14, *Regulatory Financial Statements* (RFS), p. 23 http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm shows that capital costs accounted for about 60% of TISBO (up to and including 8Mbit/s) and AISBO Non WECLA total costs in 2013/14.

3.22 We have considered the following factors when determining the duration of the charge control:

- the market review cycle specified in the Framework Directive;
- the balance between dynamic and allocative efficiency; and
- forecasting issues.

Alignment with the forward-looking period of the market review

3.23 In 2009 the Framework Directive was amended to require National Regulatory Authorities (NRAs) to carry out reviews of markets previously notified to the Commission every three years unless exceptional circumstances apply. Therefore, our proposal to set a control with a duration of three years is aligned with the new market review cycle specified in the Framework Directive as amended in 2009 (effective from May 2011).[43] We propose to set SMP conditions based on our analysis of potential market developments over this three year period and believe that it is appropriate to align the proposed charge control over the same period. Therefore, the proposed 2016 LLCC will run from 1 April 2016 until 31 March 2019.

3.24 In making our proposal for a three year control, we have also taken account of the EC Recommendation.[44]

Balance between dynamic and allocative efficiency

3.25 As noted above, under section 88 of the Act, we must only impose a price control condition that appears to us to be appropriate for the purpose of (among other things) promoting efficiency. We have therefore considered what duration of control will best promote efficiency and, in particular, will strike the appropriate balance between dynamic and allocative efficiency.[45]

3.26 The periodic re-setting of new controls allows the regulator to ensure that allocative efficiency objectives are met by setting the new control to bring charges into line with costs. Dynamic efficiency is enhanced by not doing so immediately. All other things being equal, a longer charge control period creates stronger incentives for dynamic efficiency compared to a shorter period because a longer period gives the firm more opportunity to enhance its profitability through innovation and cost reduction.

3.27 The longer the duration of the cap, the greater is the incentive to reduce costs, but the higher is the potential loss of allocative efficiency because prices can be out of line with costs for longer and perhaps by a greater amount. Shorter charge controls thus tend to give more weight to allocative efficiency, since prices have less scope to diverge from costs.

3.28 A shorter period would reduce the incentive on BT to innovate and make efficient investments and this could mean that dynamic efficiency was harmed. A longer control period also allows those using the BT infrastructure to better plan their own

[43] Art 16 of EC Framework Directive.
[44] EC, *Commission recommendation of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment,* 11 September 2013 C(2013) 5761, https://ec.europa.eu/digital-agenda/en/news/commission-recommendation-consistent-non-discrimination-obligations-and-costing-methodologies
[45] We discuss the different types of economic efficiency in more detail in Section 4.

investments in capital and business processes/systems. A period of regulatory stability and certainty is particularly important at a time when BT is investing in delivering new services and there is substantial technological change.

3.29 We consider that a three year control strikes an appropriate balance between creating incentives to reduce costs and ensuring that charges are in line with costs.

Forecasting issues

3.30 The forecasting of BT's costs over the period of the control involves many detailed calculations and assumptions, which we describe further in the sections below. Among the inputs to this calculation are the forecasts of the demand for circuits on BT's network(s). With some services having a degree of fixed costs, this means that, with all other things being equal, increased (decreased) circuit numbers will decrease (increase) BT's average, or unit, cost of providing these services. This movement in costs resulting from volume changes is an important issue in considering charge control duration and forecast uncertainty would be exacerbated over time, potentially leading to over- or under-recovery of costs.

Provisional conclusion

3.31 We believe that a charge control period of three years strikes an appropriate balance between forecast uncertainty and providing regulatory stability for stakeholders. It also aligns with the forward looking period of the market review.

Summary

3.32 We propose to impose charge controls for leased line services with:

- the CPI-X form of control; and
- a duration of a maximum of three years.

Consultation questions

Question 3.1: Do you agree with our proposal to use an Inflation-X form of charge control? If not, what alternative would you propose and why?

Question 3.2: Do you agree with the use of CPI as the relevant benchmark for inflation? If not, what alternative would you propose and why?

Question 3.3: Do you agree with our proposal for the duration of the charge controls to be three years? If not, what alternative would you propose and why?

Section 4

Proposed framework

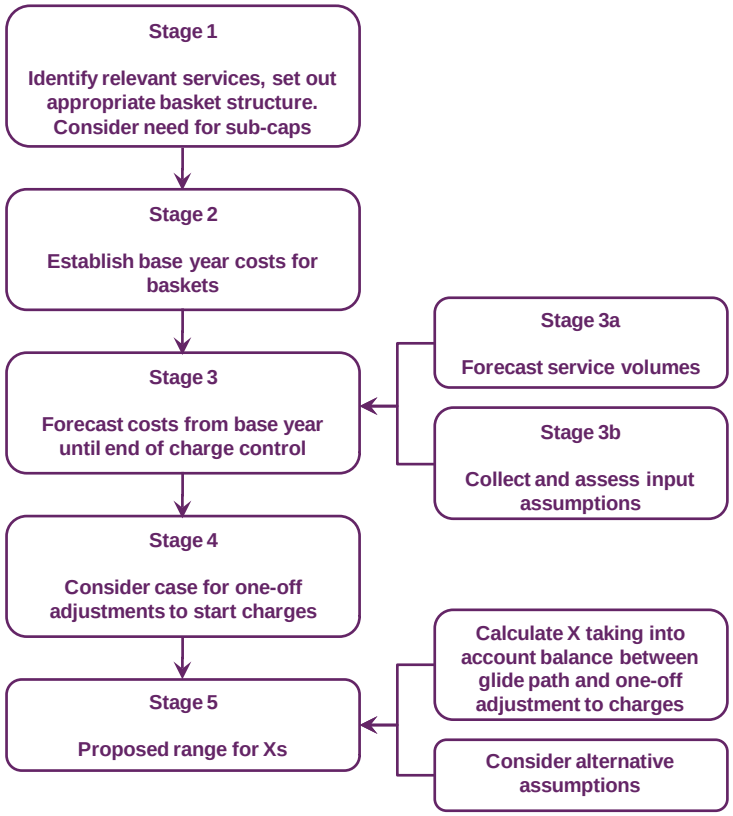
Introduction

4.1 In this Section, we describe the key economic principles that we propose to take into account in designing our proposed charge controls for low bandwidth TI services in the UK excluding the Hull area and wholesale Ethernet services at bandwidths up to and including 1Gbit/s in the LP and the RoUK excluding the CLA and Hull area. Our proposed controls for Accommodation, ECCs and TRCs are mostly based on the framework set out in this section as well, though they differ in certain aspects. We set out our proposals for these ancillary services in Section 9.

4.2 There are five key stages in the methodology we have used to design the proposed charge control:

- stage 1 - identify the relevant services and appropriate charge control baskets and sub-caps;
- stage 2 - determine the base year costs for the services covered by the charge control;
- stage 3 - forecast the costs of the services for the duration of the charge control;
- stage 4 - consider the case for one-off adjustments to charges at the start of the charge control; and
- stage 5 - calculate the value of X for the proposed basket(s) of services.

Figure 4.1: Key stages in arriving at our charge control proposals



Source: Ofcom

4.3 We discuss below the principles which support each of the five stages listed above. We then go on to set out our proposals in relation to each of these stages in Sections 5, 6, 7 and, for certain aspects, 9.

4.4 Throughout this Section, reference is often made to three types of economic efficiency. Given the importance of efficiency considerations in charge control design, we define these at the outset:

- **allocative efficiency**: this is achieved when prices of goods or services reflect the costs of the resources used to produce them;
- **productive efficiency**: this is achieved when a firm produces its output at the lowest possible cost; and
- **dynamic efficiency**: improvements in dynamic efficiency occur over time as investment and innovation, for example arising from increased competition, result in the development of new goods and services, and technological advances that make the production of current and future goods and services less costly. Dynamic efficiency can be related to productive and allocative efficiency,[46] but it is often helpful to identify it as a separate type of efficiency.

[46] Productive and allocative efficiency are sometimes collectively referred to as 'static efficiency'.

Stage 1: Identify relevant services and appropriate charge control basket structure

4.5 A charge control can either be applied to an individual service or a 'basket' of services. Combining services in a single basket means that the CPI-X constraint would apply to the weighted average of the changes in the charges of the services in the basket. We describe below the principles to which we have had regard when designing the baskets for these charge controls.

Principles for basket design

4.6 In reaching our proposals for the design of the control baskets for the leased lines services in question, we have been guided by the following principles:

- allowing relative prices to be set at efficient levels for efficient cost recovery;
- safeguarding against the risk of adverse effects arising from price distortion, particularly excessive pricing or unduly discriminatory pricing;
- giving the flexibility to allow for efficient migration when appropriate; and
- ensuring consistency with other relevant rules.

4.7 We explain below how and why we consider that these principles are relevant to determining the advantages and disadvantages of combining services into relatively broad baskets and discuss how any disadvantages could be addressed.

Advantages of broad baskets

4.8 A broad basket gives BT some pricing freedom to determine the structure of prices which meet the charge control. Compared to a narrow basket, which imposes tighter controls on the charges of individual services, this pricing freedom may be more likely to result in charges which recover costs, particularly fixed and common costs, in an efficient way. This is important in the case of wholesale leased lines because their provision is characterised by fixed and common costs, as well as ongoing technology changes.

4.9 A broad basket also allows BT to respond during the control period to changes in demand and costs by changing relative prices. Narrow basket definitions mean that Ofcom determines the structure of relative prices at the start of a control period, and BT has little freedom to vary it thereafter. This may be inappropriate in markets that are rapidly changing, such as the business connectivity markets. Furthermore, we generally believe that BT is better placed than us to assess the patterns of demand and set relative prices for each service.

4.10 A broad basket may also be advantageous where it is desirable to allow BT to set prices to encourage efficient migration between an old service and/or technology and a new replacement alternative. Where the customer takes the decision to migrate, it can be optimal to set lower prices for services supplied using the lower cost (new) technology and higher prices for services supplied using the old technology. BT can be given the necessary flexibility to offer lower prices on the new service, in order to encourage efficient migration, by including both old and new services in a single charge control basket. Where narrower baskets are used the difference in relative

prices is likely to only reflect static cost differences, which may not be sufficient to encourage efficient migration.

4.11 For these reasons, Ofcom has often chosen to combine services into broad baskets, unless there are reasons not to do so. This has been our position in the three previous leased line charge controls in 2013,[47] 2009[48] and 2004,[49] as well as in other charge controls such as WBA[50] and ISDN30.[51]

Disadvantages of broad baskets

4.12 The main disadvantage of a broad basket is that, in some circumstances, the flexibility to set relative charges can be exploited by the regulated firm to harm competition. Two sets of circumstances are particularly relevant.

4.13 First, BT may have an incentive to price in a manner that favours its downstream operations, or its 'internal' sales.[52] Where BT and competing operators use different wholesale services to provide the same downstream service, BT may have an incentive to reduce the price of the wholesale service it uses most and increase the price of the wholesale service used by its rivals or the price of 'external' sales.[53] Placing both wholesale services in a single charge control basket without further restrictions could give it the ability to behave in this way, and this could harm competition in downstream markets.

4.14 Second, there may be differences in the intensity of competition which BT faces in the provision of different services. If competitive conditions differ between services within a single basket, BT may have an incentive to concentrate price cuts on the more competitive services and offset these with price increases for less competitive services. This might lead to excessive charges for the latter and might also encourage anti-competitive pricing of the more competitive services.

Addressing the disadvantages

4.15 It is possible for both these concerns to be addressed by using more narrowly defined baskets. Baskets could be defined to include only services where there is broadly the same degree of competition, and there could be separate baskets for services which are used predominantly by BT on the one hand, and for services which are mainly used by its competitors on the other.

[47] Paragraphs 19.13 to 19.56 and 20.15 to 20.52, March 2013 BCMR Statement.
[48] Paragraphs 4.14 and 5.16, Ofcom, *Leased Lines Charge Control: A new charge control framework for wholesale traditional interface and alternative interface products and services*, 2 July 2009, http://stakeholders.ofcom.org.uk/binaries/consultations/llcc/statement/llccstatement.pdf (July 2009 LLCC Statement).
[49] Paragraphs 3.3 to 3.18, Ofcom, *Partial Private Circuits Charge Control: Final Statement*, 30 September 2004 http://stakeholders.ofcom.org.uk/binaries/consultations/ppc_charge_control/statement/ppc_stmnt.pdf (September 2004 LLCC Statement).
[50] Paragraphs 7.91-7.93, June 2014 WBA Statement.
[51] Paragraphs 4.6-4.10, Ofcom, *Wholesale ISDN130 price control*, *Statement*, 12 April 2012, http://stakeholders.ofcom.org.uk/binaries/consultations/isdn30-price-control/statement/ISDN30_final_statement.pdf (April 2012 ISDN30 Statement).
[52] 'Internal' sales refer to sales by an upstream division of BT (e.g. Openreach) to a downstream division of BT (e.g. BT Consumer or Global Services).
[53] 'External' sales refer to sales by a division of BT to another operator.

4.16 Sub-caps within a basket can also be used to address these disadvantages. It may often be preferable to define a broad basket and to prevent BT from setting charges which could harm competition by means of sub-caps. In this way, harm to competition can be prevented while, at the same time, retaining the benefits of pricing flexibility.

4.17 Whether a broad basket with sub-caps is preferable to a larger number of smaller baskets will depend on the circumstances of the case. In general, the benefits of broad baskets are greater the greater the extent of common costs and the stronger the incentives on BT to set efficient charges. Separate baskets may be preferable where BT has a strong incentive to set charges in a way which disadvantages its rivals.

Market definition and basket design

4.18 Market definition is one of a number of factors to take into account when designing the basket structure. It is not always necessary to align basket composition and market definition as it will often be desirable to include services from two or more different markets within a single basket. This is because services in different markets can share common costs and the intensity of competition in the relevant markets may be similar. In the past, Ofcom has included services from different markets in a single basket in a number of previous charge controls. For example, the TI basket in the 2013 LLCC included regional trunk and terminating segments of low, medium and high bandwidths.[54] However, if there is a marked difference in the intensity of competition between two services in separate markets, then it may be appropriate to put those services in separate baskets.

4.19 Services which are in the same market will typically have similar competitive conditions. If a charge control were justified, these could be placed in a single basket because an increase in the price of one may be constrained by switching to the other. This could, in theory, mean that a cap on the price of one service only could be a sufficient constraint, and the other service could be outside the charge control basket entirely. Where there is evidence that substitution to a charge controlled service is sufficiently strong to constrain the price of another service, then the more deregulatory option is likely to be preferred. This is relevant to our proposed charge control. The May 2015 BCMR Consultation proposes to implement a safeguard cap control on BT's very high bandwidth CISBO products, Optical Spectrum Access (OSA), Optical Spectrum Extended Access (OSEA) and Ethernet services above 1Gbit/s, outside the CLA and London Periphery, due to the constraint from the proposed dark fibre remedy.[55] This means that these products are not included in our Ethernet basket.

4.20 There may however be some cases where competitive conditions are not completely homogenous within a single market. For example competition can be less strong for some customers, or in certain geographic areas, than others. As discussed above it may also be possible to distinguish between internal and external sales where the relevant market consists of upstream products. Concerns about discrimination between certain segments of a market can therefore arise and so there is still a role for additional restrictions on pricing flexibility even where a charge control applies to services in a single market only.

[54] Section 19, March 2013 BCMR Statement.
[55] Paragraphs 8.188-8.199, May 2015 BCMR Consultation.

Consistency with other rules that apply to the services that we are proposing to charge control

4.21 We also consider that our basket design should take account of the other rules that apply to the services that we are proposing to charge control. Our charge controls should not conflict with other rules in a way that requires BT to breach a rule in order to adhere to the proposed charge controls. In particular, we have considered the requirements on BT contained in the BT Undertakings when deciding whether or not to combine Ethernet and TI as a single basket (see Section 5).[56]

Implementing our principles for basket design

4.22 We have identified a set of principles to use when we evaluate whether it would be appropriate to combine certain services together in a broad basket or keep them in separately controlled baskets in our proposed charge controls. We propose to apply the principles set out below:

- **efficient charging structures** – where the services being considered share substantial common costs, a single basket is more conducive to efficient charging structures and cost recovery;
- **competition** – where the services being considered face different competitive conditions or where BT does not use the same wholesale inputs as its rivals, placing them in the same charge control basket may give BT an incentive to set prices in a way that undermines competition. In this case, we consider introducing sub-caps or placing the services in separate baskets;
- **migration incentives** – where it is appropriate for BT to encourage migration from a legacy service to a more efficient service, placing the services in the same basket would allow BT the required pricing flexibility; and
- **consistency with other rules** – our design of baskets should take into account other rules and ensure that it does not require BT to breach these other rules.

4.23 We set out how we have balanced these principles when proposing the structure for the charge control baskets for TI and Ethernet services in Sections 5, 6 and 7.

Stage 2: Determine base year costs

4.24 In formulating our proposals to set the charge control, we need to be able to determine all costs relevant to providing charge-controlled services. We first need to determine the relevant cost base from which we can establish base year unit costs. To do this, we must establish:

- whether to base the control on BT's costs of provision or those of another operator;
- the choice of cost standard;
- the technology upon which we base our cost forecasts; and

[56] BT, *Undertakings given to Ofcom by BT pursuant to the Enterprise Act 2002,* 19 June 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/bt/Consolidated_Undertakings24.pdf (*BT Undertakings*).

- the data used for base year costs.

4.25 Once we have determined appropriate base year costs, we have a relevant reference point from which we can forecast BT's future costs based on anticipated efficiency gains, volume changes and the estimated impact of volume changes on BT's costs.

Basing our cost forecasts on BT's costs or those of another operator

4.26 In determining the costs relevant to providing charge-controlled services, we have considered two options for a relevant cost base: basing our cost forecasts on BT's costs or those of another operator.

4.27 Promoting and safeguarding competition is an important aspect of our regulation in business connectivity markets. Effective competition can lead to improvements in economic efficiency, through dynamic efficiency, and benefits to citizens and consumers. However, not all competition leads to such improvements in economic efficiency. For example, where competition leads to inefficient duplication of investment, it can reduce economic efficiency. We consider that it is appropriate to promote and safeguard competition on its merits. By basing BT's regulated charges on the basis of BT's own costs of provision, we encourage competition to arise where other operators are more efficient than BT in providing those services. This is consistent with competition on its merits.

4.28 However, we recognise that competition that may seem to be inefficient in the short term can give rise to improvements in economic efficiency in the longer term. In such cases, there may be an argument to depart from setting charges solely on the basis of the regulated firm's charges. For example, it may be appropriate to make an adjustment to reflect economies of scale advantages that are enjoyed by the regulated firm.[57]

The choice of cost standard

4.29 Historically, our typical approach to setting charge controls for BT has been to allow BT to recover the incremental costs of provision plus an appropriate mark-up to allow for the recovery of common costs.[58] In the context of proposing an apportionment of common costs for this charge control, we consider that there are two main options:

- Current Cost Accounting Fully Allocated Cost (CCA FAC) - under this approach, all of the firm's costs are distributed among the services it provides. Under the CCA accounting convention, assets are valued and depreciated according to their current replacement cost;[59] and

[57] See Section 5 for our reasons to base the control on BT's costs of provision as opposed to those of another operator.
[58] Common costs are those which arise from the provision of a group of services, but which are not incremental to the provision of any individual service.
[59] An alternative to CCA would be Historical Cost Accounting (HCA) convention, where assets are valued and depreciated according to their historical purchase cost.

- Long Run Incremental Costs + equi-proportional mark-up (LRIC+EPMU) - using this approach, we would allocate common costs across the different services in proportion to the LRIC of individual services.[60]

4.30 When assessing the cost base for our charge control, we start with an assessment of forward-looking costs, and include sunk costs, by exception, where required for dynamic efficiency reasons. Both the CCA FAC and LRIC+EPMU options are based on forward-looking costs and provide appropriate incentives for entry and investment. Also, both approaches include an allocation of fixed common costs to allow for full cost recovery.

4.31 Some relevant costs, for example, duct costs, are not forward looking costs as they are sunk costs, but nevertheless form part of the CCA accounts. We generally include relevant sunk costs in our cost base, for reasons of dynamic efficiency. If BT was not able to recover its sunk costs, this would deter future investment. However, this does not necessarily mean that BT should be allowed to recover the full replacement value of its relevant sunk assets. In our assessment of base year costs, we will consider what a reasonable return would be on the relevant sunk assets, so as to balance efficiency, while not deterring future investment.

4.32 We explain our choice of cost standard for this control in Section 5.

Costs associated with the technology used to deliver leased lines services

4.33 A key element in forecasting the costs used as a reference to set charges is to identify the technology used to deliver the services in question. We would normally expect the processes and assets used by firms to produce goods and services to be subject to change over time as firms seek improvements in productive efficiency. This is particularly the case in competitive markets. Many of these changes occur gradually over time and can be considered to be 'business as usual' changes. We typically capture such reductions in unit costs through the use of an efficiency improvement target within our charge control cost forecasts.[61] However, from time-to-time major changes in technology (sometimes referred to as 'paradigm shifts') arise that provide opportunities for the firm to achieve larger improvements in productive efficiency.

4.34 In this section, we discuss two different approaches to choosing the relevant technology to model during periods of major technology change. These are the modern equivalent asset (MEA) and the anchor pricing approaches.

The Modern Equivalent Asset approach

4.35 Ofcom's preferred approach to setting charges is to base costs and asset values on what is believed to be the most efficient available technology that performs the same function as the current technology. This may or may not be the one actually in use. This is sometimes described as the MEA approach to pricing. Such an approach is consistent with how we would expect charges to be set in a competitive market.

[60] For example, if the LRIC of service X was £100/unit and the LRIC of service Y was £50/unit, then (assuming the same volumes of each service) we would have a 2:1 ratio. If BT had common costs of £6m, an equi-proportional mark-up would allocate £4m to service X and £2m to service Y.

[61] In a CPI-X charge control, we usually allow for both 'frontier shift' (the improvement in efficiency which an already-efficient company would expect to make due to technical progress) and 'catch-up' (the removal of inefficiencies existing at the start of the control period).

4.36 In order to qualify as the MEA, a new, more efficient technology must be capable of at least delivering the same service, to the same level of quality and to the same customer base as the legacy technology.[62]

4.37 Setting prices on the basis of MEA costs is consistent with the asset valuation under the CCA framework, which is used in our 2015 LLCC Model. Under the CCA framework assets are valued at their current replacement cost and this is reflected in changes in the underlying asset prices. This can result in either holding losses, associated with reductions in the asset prices, or holding gains, increases in asset prices. In some circumstances the replacement asset might not be identical to the asset in use – it may well have superior functionality and/or support additional services. In such cases, the CCA value of the existing asset should be adjusted downwards to reflect the cost of a functionally identical modern asset.

The use of 'anchor pricing' during technological change

4.38 There are circumstances however where we would not set charges on the basis of the costs of new technology. There can be significant practical challenges and regulatory risks associated with adopting a new MEA when there are major changes in technology. In response to such concerns, we often adopt another approach to charge control setting, which we refer to as 'anchor pricing'. This approach provides a solution to the practical challenges by departing for a period of time from the path of prices we would expect to observe in a competitive market.

4.39 The key principle of the anchor pricing approach is that consumers of existing services are not made worse off by the adoption of new technology, but others could be made better off by the adoption of newer services. In other words, following technological change, prices should not rise above the level implied by the hypothetical continuation of the existing technology.

4.40 Under anchor pricing, costs are projected as if no major technological changes were expected for the period of the control. If we use the anchor pricing approach to set the control, our cost projections usually reflect an assumption that existing technology remains in use for the period of the control. Additionally, we assume that all customers are supplied using this technology.

4.41 Anchor pricing can be implemented in a number of ways, but the key feature is that charges do not immediately reflect the costs of a new technology but, for a time, may be based on the costs of an existing, proven technology. This approach is intended to give the regulated firm incentives to invest in new technology only when providing services over the new technology would lower its overall costs and/or would enable it to provide higher quality services for which consumers are willing to pay a premium. It also means that the risk associated with the new technology is borne by the regulated firm.

Our criteria for assessing the most appropriate approach

4.42 In this section, we set out the economic factors that we consider will be relevant to our assessment of whether to use MEA or an anchor pricing approach for our proposed charge controls:

- degree of certainty over costs;

[62] Clearly, the MEA is not static, so the relevant time frame needs to be taken into account when assessing different technologies.

- investment incentives; and
- customer migration.

Degree of certainty over costs

4.43 The MEA approach relies on Ofcom being able to set prices correctly based on the most efficient modern technology. It is therefore important to have robust cost data for the relevant MEA technology. Some of the practical difficulties in setting prices on the basis of a technology that has not yet become established include that:

- it is not always clear what the most efficient new technology is;
- it is very difficult to set the prices on the basis of a new reported unit cost for a technology in the early stages of its adoption because, initially, costs are unlikely to be a good indicator of their long-term values; and
- to enable cost recovery with this approach, it requires the regulator to allow separately for any transitional costs, e.g. migration costs, and to choose the optimal path for transition.

4.44 These practical challenges could mean that if Ofcom were to set charges on the basis of MEA, there is a risk of regulatory failure, which could lead to incorrect estimates of the forward-looking costs of providing services. Therefore, in those cases, we adopt the anchor pricing approach.

Investment incentives

4.45 It is important that the cost standard we adopt is consistent with efficient investment incentives. The anchor pricing approach will in general give efficient signals for investment; however, it may not ensure that the benefits of new, lower-cost technology are shared with consumers. Although the MEA approach allows customers to share in the benefits of new technology, we need to ensure that this is consistent with appropriate incentives for investment.

4.46 In a market with rapidly changing technology, the MEA for a given service may change frequently. There can be significant sunk costs involved in investing in a new technology as well as transition costs in moving from one technology to another. If these are not taken into account, then changes in the MEA may not allow efficient operators the opportunity to recover those costs, which has the potential to give rise to disincentives for future investments. Therefore, we may need to take into account holding losses associated with the legacy technology and/or transition costs associated with the new technology.[63]

Customer migration

4.47 Where the customer takes the decision to migrate, it can be efficient to set relatively higher prices for services supplied using the legacy technology. We would expect this to encourage migration away from the legacy technology, thereby allowing the operator to benefit from the economies of scale associated with running one, rather than two, technologies.

[63] This does not mean that the MEA approach should prevent losses that are caused by an operator's inefficiency. Nor should it lead to higher prices than would be charged under an anchor pricing approach.

4.48 The anchor pricing approach can be consistent with providing efficient migration signals. By setting the price control on the basis of the more expensive legacy technology, the firm is readily able to differentiate the prices of the services provided using the legacy and new technologies to provide incentives for customers to migrate to the newer services. Adopting similar pricing structures can be achieved under an MEA approach, but it requires the services provided by the legacy and new technologies to be in the same charge control basket, and there to be sufficient flexibility in the charge control constraints, e.g. sub-caps.

Assessment criteria

4.49 In the light of the factors discussed above, we have identified a set of questions that have guided our choice as to which approach we consider is most appropriate for our proposed charge controls. Those questions are set out below:

- can we identify the relevant MEA for delivering the service in question?
- can we calculate robust cost estimates for the services based on the MEA?
- would the use of the MEA approach allow an efficient operator the opportunity to recover its costs?
- does the MEA approach give appropriate migration signals to consumers?

4.50 When the answers to all these questions are positive, it is likely to be appropriate to adopt the MEA approach.

4.51 We address these questions for each of the technological changes to BT's network in Sections 6 and 7.

Data used for base year costs

4.52 Under our proposed top-down approach to forecasting costs over the control period (which we explain further in Annex 6), we typically start with BT's most recently published CCA FAC information in the Regulatory Financial Statements (RFS) as a starting point.[64]

4.53 The RFS is BT's view of its costs, and the appropriate allocation of those costs. Therefore charge control processes, of which the proposed 2016 LLCC is no exception, typically involve reviewing in detail the financial information provided by BT to ensure it represents the best available information, given our statutory duties and obligations, upon which to base the charge control. Based on these reviews, from time to time we need to make adjustments to BT's financial data. We discuss the adjustments we propose to make in this case in Sections 6 and 7.

[64] We have sometimes used older data where we considered that it was the most robust data available. For example, in the June 2014 FAMR Statement we used 2011/12 information as the base year from which to model forward looking costs rather than 2012/13 data which was the most recent available. This was because the 2012/13 RFS contained material cost allocation methodology changes when compared to the 2011/12 RFS which, our analysis demonstrated, would result in significant over-recovery of costs for BT.

Common cost recovery

4.54 Our primary focus in setting charges is to determine what we consider to be an appropriate pattern of cost recovery, including common cost recovery. Using BT's CCA FAC data as the starting point for considering cost recovery does not guarantee that all of BT's common costs are recoverable, but it does mean that a share of common costs are taken into account when setting regulated charges. A share of the common costs will also be left for BT to recover in unregulated markets.

4.55 BT's Detailed Attribution Methodology (DAM) [65] describes how BT allocates costs to services in the RFS. Essentially, BT aims to allocate costs in relation to usage. For example, BT calculates its total costs for a cost category e.g. land and buildings and then spreads those costs among the services that use it. Land and buildings costs are spread between the different services housed at BT's exchanges, in accordance with the amount of floor space devoted to each service. Each year, the amount of fixed common costs allocated to a particular service in the RFS may vary depending on the relative usage of that particular cost item. For example, if there was a large growth in Local Loop Unbundling (LLU) lines, then BT's DAM may allocate fewer of the common costs of land and buildings to leased lines and more to LLU.

4.56 In our charge control modelling, we do not seek to forecast the outcome of the RFS.[66] Rather we seek to establish an appropriate pattern of common cost recovery, as set out above. As we explain further in Annex 11, our modelling approach assumes that the total amount of fixed and common costs recovered from modelled services in the base year remains the same throughout the control, adjusted only for changes in efficiency and inflation. Although this approach is likely to be a simplification of reality, through a consistent treatment, we can ensure that common costs are taken into account in one or another of the controls, with no bias to under or over recovery of costs.

Stage 3: Forecast costs for the duration of the charge control

4.57 Having modelled the relevant base year costs under stage 2, the next stage is to forecast, from this starting point, how costs are likely to change over the duration of the proposed charge control.

4.58 We propose that the key determinants of cost movements in 2015 LLCC Model are:

- volume changes;
- the impact of those volume changes on capital and operating expenditure, as reflected by the Asset Volume Elasticities (AVEs) and Cost Volume Elasticities (CVEs);
- input price changes;
- anticipated improvements in BT's efficiency;

[65] BT Group, *Detailed Attribution Methods 2014*, 15 August 2014, http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2014/DAM2014.pdf (DAM).

[66] In order to forecast the RFS, we would need to forecast the changes in usage of all BT's services, many of which may belong to unregulated markets. This would be an extremely complex and demanding task, carrying a high risk of error.

- the cost of capital; and
- the impact of imposing other remedies.

Volume changes

4.59 In order to understand how costs are likely to change over the charge control period, we forecast the volume of leased lines services that BT is expected to supply. Changes in the volume of BT wholesale leased lines services will be affected by overall market growth, as well as BT's expected share of the leased lines markets. For the 2016 LLCC a particular consideration is how volumes might change as a result of the introduction of the proposed dark fibre remedy. To make our volume forecasts, we have reviewed forecasts based on information provided from BT, other CPs and independent analysts.

4.60 This is discussed in more detail in Sections 6 and 7 and Annex 8.

Relationship between costs and volumes

4.61 Having forecast the changes in volumes, we then model how the costs of the components that make up leased lines services will vary in response to volume changes for particular services. To do this, we use estimates of the AVEs and CVEs.

- CVEs, defined as the percentage increase in operating costs for a 1% increase in volume, are used to determine the level of operating costs in response to changes in volume; and
- AVEs, defined as the percentage increase in assets required for a 1% increase in volume, are used to determine the level of capital costs in response to changes in demand for leased lines services.

4.62 This is discussed in detail in Section 5 and Annex 8.

Input prices

4.63 The price that BT has to pay for its various inputs, e.g. labour or assets, will clearly impact on its costs. For example, changes in asset prices impact on BT's asset base valuation and give rise to holding gains or losses which are reflected in costs in the year in which they arise. In order to assess these costs, we forecast the changes in the price of inputs over the duration of the charge control.

4.64 This is discussed in detail in Sections 6 and 7 and Annex 8.

Efficiency estimates

4.65 We forecast the expected efficiency improvements that BT might reasonably be expected to achieve over the duration of the charge control. These efficiency improvements relate to expected changes in real unit costs that do not depend on changes in volumes, but reflect the general improvements in efficiency.

4.66 This is discussed in Sections 6 and 7 and Annex 8.

Cost of capital

4.67 Under a charge control, we set the value of X such that BT's rate of return projected for the last year of the charge control is expected to be equal to its WACC.

4.68 This is discussed in detail in Section 5 and Annex 9.

Impacts of introducing the proposed dark fibre remedy

4.69 The availability of a dark fibre remedy is likely to have an impact on BT's costs for active leased lines over the duration of the proposed charge control. For example, cannibalisation of active circuits by dark fibre may affect BT's cost recovery, and the remedy is likely to have associated development and implementation costs which BT will need to recover.

4.70 For the purposes of the charge control, we need to consider how dark fibre may affect BT's costs, and how this should be reflected in the active leased lines charge control, if appropriate. We set out our approach and implementation of this in Section 6 and Annex 6.

Stage 4: Consider whether to make starting charge adjustments

4.71 In addition to making adjustments to BT's base year costs, which are the starting point for our cost forecast we have also considered whether to propose making any one-off adjustments to prices at the beginning of the control period.

4.72 Ofcom has received a number of submissions from Vodafone relevant to our regulatory judgement over the use of glide paths and/or one-off starting charge adjustments for this control period.[67] For the reasons set out below we propose to retain our general preference for glide paths but also set out a proposed framework for making starting charge adjustments. Our full response to the points raised by Vodafone is in Annex 13.

Our general preference is for glide paths

4.73 Within the price cap (i.e. CPI-X) approach to controlling charges there are three broad options for closing any gap between forecast revenues and costs over the charge control period:

- **glide path only approach**: charges follow a glide path (determined by the X in the CPI-X control) such there is a gradual convergence of charges from the level at the start of the charge control period to the forecast efficient level of costs at the end of the control period;

[67] Vodafone report prepared by Frontier Economics, *The relationship between BT profitability and price regulation*, November 2014, http://www.vodafone.com/content/dam/group/policy/downloads/the-relationship-between-BT-profitability-and-charge-controls.pdf (Vodafone's Frontier Economics report); Vodafone, *Suggested approach to charge control volume forecast error correction*, November 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/Suggested_approach_to_charge_control_volume_forecast_errror_correction_Vodafone_February_2015.pdf(Vodafone's Error Correction); and Vodafone, *Consequences of Charge Control Baskets*, February 2015, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/Consequences_of_charge_control_baskets_Vodafone_February_2015.pdf (Vodafone's CC Baskets).

- **one-off starting charge adjustments**: charges are adjusted to cost at the beginning of the control period. Under this approach the required annual change in prices in subsequent years of the control, i.e. resulting from the X used in the price cap, will usually be smaller than under the glide path approach; and

- **combination of one-off adjustments and a glide path**: charges are adjusted at the start of the control period to bring them closer in line with cost, but some of the gap between charges and costs is achieved through price changes, i.e. determined by the X, in subsequent years of the charge control.

4.74 In all three cases the firm's expected rate of return should equal its cost of capital at the end of the charge control, but to the extent that we use a glide path approach, this means that cost reductions (or increases) will feed into price reductions (or increases) with a longer regulatory lag.

4.75 Where we have set charge controls to replace existing controls, e.g. in wholesale line rental (WLR)/LLU and the LLCC, we have typically had a preference to close any gap between charges and costs using glide paths, or a combination of some limited one-off adjustments with glide paths, rather than relying heavily or exclusively on one-off adjustments.[68] This is for two main reasons:

- to promote **productive efficiency** – a glide path allows the firm to retain the benefits of unit cost reductions beyond those forecast when setting the control for longer than one-off adjustments. As a consequence, the use of a glide path gives BT better incentives to pursue improvements in productive efficiency and/or grow volumes[69] than one-off starting charge adjustments.[70] These better incentives can be of particular importance where improvements could be made nearer the end of the control period. In such cases, the use of glide paths reduces the firm's incentives to delay efficiency improvements or pursue additional volumes until the beginning of the next control period because, even if improvements are made at the end of the previous control period, the firm retains (at least some of) the profit benefit associated with the improvement through the following control period; and

- to promote **dynamic efficiency** – a glide path avoids discontinuities in charges over time and leads to a more stable and predictable background against which investment and other decisions may be taken. For example, if CPs enter into a three year contract then adjusting charges via a glide path allows CPs time to re-structure their contracts with end-users as the wholesale charges change more gradually. The use of glide paths can therefore support improvements in dynamic efficiency.[71]

4.76 Although the use of glide paths can provide stronger incentives for productive and dynamic efficiency improvements than one-off starting charge adjustments,[72] it does

[68] For example, see paragraph 6.35, Volume 2, June 2014 FAMR Statement.
[69] In the presence of fixed costs the firm can reduce unit costs by pursuing volume growth.
[70] Conversely, if costs are increasing then a glide path results in slower price increases and so it provides BT with incentives to control costs.
[71] A further characteristic of glide paths identified in the March 2013 BCMR Statement is that their use can more closely mimic the workings of a competitive market than one-off reductions, where excess profits are gradually eroded as rivals improve their own efficiency, see paragraph 18.101, March 2013 BCMR Statement.
[72] Although in cases where the assets and production processes used by the firm to provide the regulated services are also important inputs to services provided by the firm in markets that are effectively competitive, the firm may have incentives to pursue improvements in productive efficiency

so by allowing prices to diverge from costs for longer. The use of glide paths can therefore involve a reduction in short term allocative efficiency. For any particular charge control the appropriate balance between one-off starting charge adjustments or glide paths involves a regulatory judgement about the appropriate trade-off between these economic efficiency considerations.[73]

4.77 Historically, we have typically attached higher weight to productive and dynamic efficiency considerations for wholesale leased lines, rather than trying to achieve allocative efficiency at every point in time. This is because productive and dynamic efficiency improvements are likely to generate greater benefit to consumers over time; as the firm becomes more efficient and increases investment and innovation, this should ultimately result in lower prices and better services for consumers. Consistent with this judgement, Ofcom has historically had a preference in favour of glide paths over one-off starting charge adjustments in its leased line charge controls.

When we would propose to make starting charge adjustments

4.78 Despite our general preference for glide paths there can be circumstances in which the balance of efficiency considerations implies that some one-off starting charge adjustments are appropriate. For example, in the July 2009 LLCC Statement we found that it was appropriate to make some one-off adjustments to Ethernet charges.[74]

4.79 For the purpose of this control, we propose that there are broadly two types of circumstances in which the balance of efficiency considerations could imply that one-off starting charge adjustments may be appropriate:

- where the risks to economic efficiency or competition from distorted pricing signals are particularly significant, and therefore outweigh the benefits of a glide path approach; and

- where prices are significantly above or below cost for reasons other than efficiency or volume growth.

4.80 However, even in those circumstances, if we considered that a starting charge adjustment would undermine the stability and predictability of the regulatory regime, including implications for future investment, we may still not consider it appropriate to make one.

4.81 In assessing possible starting charge reductions or increases,[75] we also need to be mindful of alternative and potentially more proportionate regulatory approaches. It may be possible, for instance, for BT to make acceptable voluntary adjustments in prices without us having to mandate such changes through detailed one-off reductions or increases. We also need to consider the materiality of the changes

absent the use of a glide path. In the case of wholesale leased line terminating segments, many of the underlying assets are not used to provide other competitive services, and so BT would have relatively poor incentives to operate efficiently if the regulatory framework required it to closely align charges with cost at all times.

[73] Although other considerations may also be relevant for specific cases; for example, incentives for the regulated firm to comply with other regulatory remedies.

[74] Paragraphs 4.177-4.195 and 5.85-5.96,July 2009 LLCC Statement.

[75] We believe it is important that adjustments should be applied symmetrically, that is prices can be adjusted both upwards and downwards depending on the evidence.

given the intrusive nature of starting charge changes. Our consideration of starting charge adjustments is therefore weighed against proportionality and the possibility of implementing alternative approaches.

4.82 In the sub-sections below, we set out the conceptual framework that we propose to apply for the Ethernet and TI baskets in relation to starting charge adjustments.

Distorted pricing signals

4.83 As discussed above, there are arguments for bringing charges into line with cost sooner than would be implied by a pure glide path approach where charges are particularly high or low relative to cost. In such circumstances the signals for economic decision-making that are given by charges may be distorted. Such distortions may give rise to risks to economic efficiency that could outweigh the efficiency benefits of glide paths, for instance:

- significantly distorting customers' consumption decisions to the detriment of allocative efficiency; and/or
- significantly distorting investment decisions to the detriment of dynamic efficiency.

4.84 We would normally expect the charges observed in a competitive market to be consistent with maximising economic efficiency. Therefore, if a charge could be considered to be consistent with that which would be levied in a competitive market, we would not expect it to give rise to distorted economic signals. In determining whether a charge appears to give rise to particular risks of economic distortion, we have historically considered whether it appears to be consistent with that which we would expect in a competitive market. To do so we have compared BT's charges against DLRIC[76] and DSAC.[77]

4.85 The economic rationale for using DLRIC and DSAC stems from the theory of contestable markets. In a contestable market, we would expect a charge to be within the range of LRIC[78] and SAC,[79] and to pass all relevant combinatorial tests.[80] Charges set equal to BT's CCA FAC, which is an accounting measure of costs rather than an economic measure, may satisfy such tests, but they are unlikely to be the only set of charges that would do so. Charges for services provided in a competitive market may, and indeed are likely to, depart from CCA FAC.

4.86 As we noted in the March 2013 BCMR Statement, undertaking combinatorial tests robustly is both complicated and impractical given the data that is available.[81] DLRIC

[76] The Distributed Long Run Incremental Cost (DLRIC) is a cost measure related to the LRIC off a component. Within BT's network, groups of components are combined together to form a 'broad increment' (e.g. the 'Access' network or the 'Core' network). The DLRIC of a component is equal to the LRIC of a cost component plus a share of the costs that are common within the broad increment.
[77] The Distributed Stand Alone Cost (DSAC) for a component is equal to its LRIC plus an allocation of the SAC of the broad increment.
[78] The Long Run Incremental Cost (LRIC) is the incremental cost of a service over the long run (i.e. the period over which all costs can, if necessary, be varied).
[79] The Stand Alone Cost (SAC) is the cost of providing a service on its own (i.e. on a stand-alone basis).
[80] A combinatorial test assesses whether the revenue from a combination of services recovers the common costs between the services as well as the incremental cost of each service.
[81] Paragraph 18.113, March 2013 BCMR Statement.

and DSAC, which are generated by BT's LRIC model, are used by Ofcom as a practical alternative to using combinatorial tests based on LRIC and SAC.[82]

4.87 Although DLRIC and DSAC are conceptually relevant benchmarks for considering the appropriateness of BT's charges, the reliability of the estimates generated by BT's LRIC model has been questioned by Ofcom, as explained in the December 2012 Ethernet Disputes Determinations[83] and as noted by Vodafone in its response to our Call for Inputs. Vodafone argued Ofcom should correct for the errors identified in BT's DSAC estimates particularly as there is more time available now compared to when the issue emerged in the Ethernet disputes.[84]

4.88 We do not consider that it is proportionate to make fundamental changes to BT's LRIC model, given the limited role of DSACs in this charge control.[85] However, we acknowledge Vodafone's concerns and have taken into account the reliability of BT's DSACs in considering the appropriate weight to place on DSAC information when considering the need for starting charge adjustments.

4.89 An alternative to using DLRIC and DSAC is to compare charges to a cost benchmark based on a specific mark-up on FAC. The advantage of this approach is that it does not rely on the outputs of BT's LRIC model, and therefore avoids the reliability concerns in relation to BT's DSAC and DLRIC information. The disadvantage is that, while perhaps more reliable, FAC information is less economically relevant in assessing whether charges are 'too high' or 'too low' than DLRIC and DSAC information. We could impose a control that brings all charges to FAC. However, as discussed in Section 5, this is unlikely to represent the most efficient pattern of cost recovery. Alternatively, we could consider not imposing any constraint on BT's individual charges, recognising the limitations of using FAC for economic reasons as well as DLRIC and DSAC due to reliability concerns.

4.90 We do not consider either of these to be desirable. Imposing no constraint risks distorting consumption and investment, while setting charges to FAC is unlikely to be economically efficient. Therefore, reflecting these considerations, in assessing whether BT's TI and Ethernet charges are sufficiently out of line with costs to suggest starting charge adjustments are appropriate, we propose to compare BT's charges against our forecasts of DSAC, DLRIC and FAC in 2016/17 (the first year of the next charge control period). When comparing charges with FAC, we propose to use double FAC as a threshold. We have chosen this based on regulatory judgement, taking into account BT's current rates of return on wholesale leased lines (see Annex 5 for further details on this).

[82] DLRIC and DSAC have historically been used by Ofcom both in the context of considering whether to make starting charge adjustments and for considering compliance with cost orientation obligations.
[83] Paragraphs 12.110-12.246 in Ofcom, *Disputes between each of Sky, TalkTalk, Virgin Media, Cable & Wireless and Verizon and BT regarding BT's charges for Ethernet services, Determinations and Explanatory Statement*, 20 December 2012, http://stakeholders.ofcom.org.uk/binaries/consultations/ethernet-services/annexes/Ethernet_FD.pdf (December 2012 Ethernet Disputes Determinations).
[84] Pages 28-29, Vodafone, *Response to the April 2014 BCMR CFI*, 10 June 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity-market-review/responses/Vodafone.pdf
[85] The concerns we set out in the December 2012 Ethernet Disputes Determinations primarily related to the definitions of the broad increments used to calculate DLRIC and DSACs. These concerns are a fundamental building block of the LRIC model so are not a trivial issue to resolve. However, we note that they do not, as far as we are aware, affect the component LRIC and FAC estimates used to estimate AVEs and CVEs for this control.

4.91 Where charges appear to be excessively high or low based on our tests, we propose to apply a starting charge adjustment unless the following applies:

- service revenues and volumes are not material and/or expected to cease over the charge control period; and/or
- TI services that are priced below DLRIC are left unadjusted as we do not expect entry into a declining market meaning that our concerns around predatory, anti-competitive pricing are unlikely to be significant.

4.92 In carrying out our analysis, we propose to consider services in aggregate rather than on an individual basis. So for a particular Ethernet service, e.g. EAD 100Mbit/s, we compare charges with the costs of connection, rental and main link over a customer lifetime of three years. For a particular TI service, e.g. 2Mbit/s PPCs, we compare charges with the costs of a local end, link, distribution and regional trunk element over three years. The latter is consistent with the typical contract duration for leased lines at both the wholesale and retail level (see Section 5).[86] We set out in detail how we have carried out this analysis in Annex 6.

Prices are significantly above cost for reasons other than efficiency or volume growth

4.93 The glide path approach provides BT with incentives to pursue gains in both efficiency and volume growth, i.e. to 'out-perform the control'. However, charges may depart from costs at the start of a control period for reasons other than out-performance during the previous charge control period.

4.94 In Annex 5 we have sought to identify why BT's return on capital employed for business connectivity services in 2013/14 was significantly above its cost of capital. Based on this analysis, we have identified three main drivers of BT's recent profits. These are:

- incentive effects – i.e. efficiency and volume outperformance;
- changes in BT RFS treatment of business connectivity service costs; and
- changes in our modelling approach.

4.95 We discuss each of these in turn and whether we should impose a starting charge adjustment. With regards to the second driver, in addition to changes in BT's RFS treatment we also consider changes to costs and cost allocation made in the context of our base year adjustments.

Incentive effects

4.96 As discussed above, one of the principle reasons for preferring glide paths to making one-off starting charge changes is that they provide BT with better efficiency and volume growth incentives than rate of return regulation.[87] We therefore do not believe

[86] We note that the treatment of services in aggregate is consistent with previous starting charge adjustments made in the July 2009 LLCC Statement, when we established the appropriate starting charge level by comparing the aggregate connection and rental prices over the contract life of a circuit (assumed to be three years). See paragraph 3.235, July 2009 LLCC Statement.

[87] Rate of return regulation involves setting prices in line with an operator's efficiently-incurred costs (including an appropriate return on capital) at all times. In general rate of return regulation does not allow the regulated firm to retain the benefits (through additional profits) that are generated from

that excess returns that are driven by efficiency and volume improvements should result in a starting charge adjustment.

4.97 With respect to volume changes, we believe that leased line volumes are often endogenous to BT as they are driven by factors such as price and quality, which, under the current regulatory framework, are partly determined by BT. As set out above, one of the ways in which BT can reduce unit costs is to increase volumes at a faster rate than our forecasts. Even in the case of the TI market, where volumes are declining, BT may have an incentive to reduce the volume of services that use particularly old and costly platforms, such as sub-2Mbit/s services, at a faster rate than others.

4.98 We therefore propose not to impose a starting charge adjustment where returns above BT's cost of capital are driven by efficiency or volume outperformance.

Changes in treatment of business connectivity service costs

4.99 Some of BT's costs are incremental, meaning that they are directly caused by the provision of a service increment in addition to the other services that BT provides. However, other costs are common, meaning that they are not incremental to the provision of any individual service but rather are caused by the provision of a group of services.

4.100 Distinguishing between common and incremental costs can be difficult, particularly in the case of costs that are relevant to more than one service, such as overheads. These may often appear to be common, but strictly a proportion may actually be incremental to individual services, particularly in the long-run.[88] [89] It may be possible to identify an objective cost driver that can be used to measure the relationship between the output of a service and the incremental costs incurred.[90]

4.101 BT's CCA FAC service costs are not based on a LRIC plus EPMU approach to costing, but rather use an activity-based approach to costing services that does not specifically identify long-run incremental and common costs. As we explain below, under this approach some costs are identified as being directly relevant to services, while others are apportioned to services.

4.102 BT's method of cost accounting follows a number of regulatory accounting principles, including the following:

efficiency savings, as the reductions in cost that arise from the efficiency savings will feed straight through (or at least very quickly) into regulated charges.

[88] We use the term 'long run' in an economic sense, where all inputs are variable.

[89] An example of such a cost could be accommodation. Suppose staff within a firm are employed to produce two products but they all work in the same building (i.e. the cost of the building is relevant to both products). One might consider the accommodation costs as common in this case. However, if the firm stopped producing one of the products, it may not incur the same accommodation costs (particularly in the long-run). For instance it could rent less floor space or it could use vacated floor space for the provision of other products or services. In this case, we would consider the proportion of the accommodation costs that would change with the output of the service to be incremental.

[90] In the case of accommodation, this could be floor space for instance; if 80% of a firm's floor space was used by staff and equipment that contributed to the supply of one particular product, then 80% of the firm's accommodation costs could be considered incremental to that product.

- **objectivity** – the attribution should be objective and not intended to benefit either BT or any other operator;[91] and

- **causality** – costs and assets should be attributed to components and products in accordance with the activities which cause the costs to be incurred (or the assets to be acquired).

4.103 When attributing costs to a particular component or product/service, BT does one of the following:

- allocation – this is used when costs do not need to be apportioned to more than one category. In economic terms, such costs could generally be regarded as incremental; and

- apportionment – this is used when a cost cannot be directly associated to a single category and needs to be split across several cost categories. It is done on the basis of cost drivers, e.g. pay, bandwidth usage etc. Such costs can be either common or incremental in economic terms.

4.104 Over time, BT may change the manner in which it attributes certain costs, for example where it has been able to identify a more suitable cost driver or is able to improve its information on the cost driver. As discussed in Annex 5, this is one of the reasons why BT's return on capital was higher than what was forecast in the 2013 LLCC, as a significant amount of costs was reattributed from TI and Ethernet to other markets following changes to BT cost attribution approaches and information in 2012/13 and 2013/14.

4.105 When defining the types of cost that can be reattributed we distinguish between common and incremental costs. In the case of common costs, there are a number of ways in which these can be reasonably apportioned and economic analysis would typically suggest that there is no singularly 'correct' way of apportioning them. Given this, we do not believe it is appropriate to make starting charge adjustments if costs are reattributed from one service to another over time on the basis of changing from one reasonable approach to another.

4.106 However, cost attributions can also be changed in order to replace an approach that is not appropriate. In such circumstances, the new approach may better reflect cost causality and represent a more objective attribution. Where such cases occur it is possible that costs which are incremental to a specific service were previously included in another service FAC, which may have resulted in higher charges for the latter than if a more objective cost base had been used. If prices are not changed to reflect the reduction in costs that arises from adopting an approach that better reflects cost causality, and that potentially removes an attribution that benefits a particular operator, then the margin on the service would increase in a manner that is unrelated to improved efficiency or volume growth.[92] In this case, a starting charge adjustment, which brings charges closer to the appropriate cost for the service, will result in improved allocative efficiency. Furthermore, such changes are unlikely to

[91] Further details of these principals can be found in Ofcom, *Regulatory Financial Reporting – Final Statement,* 20 May 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/bt-transparency/statement/financial-reporting-statement-may14.pdf (May 2014 Regulatory Reporting Statement).

[92] Conversely, if costs that are incremental to a service have previously been allocated to another service, such that the costs of the former are understated, then it may be appropriate to adjust prices upwards.

impact BT's incentives to out-perform the charge control as they do not involve removing additional short term profits associated with out-performance.

4.107 A further relevant consideration is whether a price adjustment will impact on investment incentives and the stability and predictability of the regulatory environment. In this respect, we believe it is important to make a distinction between two types of cost reattribution: one that reattributes costs between regulated markets and one that reattributes costs between regulated and unregulated markets.

4.108 Where costs are reattributed between regulated markets, we believe that there can be risks to BT's opportunity to recover its efficiently incurred costs of provision from making a starting charge adjustment. The potential risks arise because Ofcom currently does not set charge controls for all of BT's regulated products simultaneously; rather the various charge controls are staggered through time. Furthermore, as discussed above, Ofcom's top-down models start with BT's CCA FAC information in the RFS and, although we make adjustments where appropriate, we do not forecast the outcome of the RFS. It is therefore important that our top-down charge controls are consistent in their treatment of common costs.

4.109 If we attempted to rapidly reflect changes in cost allocations in one charge control, without making a compensating adjustment in another control which would also be impacted by the change in cost allocations, we may put BT's opportunity to recover its efficiently incurred costs at risk. Through the use of glide paths we can smooth the impacts through the various staggered charge controls. Also, by acting in a consistent manner to changes through time, we would expect to ensure that BT does not systematically gain or lose out from such changes in cost allocations.[93]

4.110 Given this risk to BT's opportunity to recover its efficiently incurred costs, and the risks to regulatory stability, we believe that it is appropriate to ensure that such cost reattributions, i.e. between regulated markets, are recovered via a glide path.

4.111 However, where costs are reattributed between regulated and unregulated markets, and an adjustment was not made when setting the charge control for the regulated product(s), we believe that there is a significant risk of competition being distorted if prices do not respond quickly to improved cost allocations.[94] If BT allocates costs that are incremental to an unregulated service to a regulated service, charges for the latter will be set at too high a level relative to cost, which will distort competition and investment and give rise to an economically inefficient outcome.[95] In this scenario, where the costs involved are significant, we believe it is appropriate to impose a starting charge adjustment because a glide path would result in the competitive

[93] For example, suppose Ofcom set a three year charge control for product A at the start of 2016 and for product B at the start of 2017. In 2016, BT may reallocate a proportion of costs from product B to A. If we imposed a starting charge adjustment on B in 2017 and reduced prices, some of those reallocated costs would not be recovered from either B or A (which Ofcom set a charge control for in 2016 assuming that the costs were allocated to product B). BT would therefore not recover all of its costs. Conversely, if costs were reallocated from A to B and we made an upwards adjustment, BT would over-recover its costs. However, by only applying a glide path (i.e. without a starting charge adjustment), BT will have the opportunity to recover the appropriate amount.

[94] If BT attributes incremental costs for unregulated services to regulated services in its accounts but we remove them from the base data when setting the charge control, then a starting charge adjustment is not necessary because current charges are set based on efficiently-incurred costs.

[95] For example, setting charges above efficiently-incurred costs for a regulated service will result in demand (and therefore output) falling below an efficient level. Conversely, if BT allocates the incremental costs of a regulated service to an unregulated service, then charges would be set below efficiently-incurred costs and this would cause output to rise above an efficient level.

distortion persisting for a longer period. We consider that the use of a glide path to take such changes into account would also give BT incentives to continue making inappropriate cost attributions going forward. Furthermore, in cases where costs that are incremental to a downstream unregulated service are allocated to a regulated upstream input, it would be difficult to detect certain anti-competitive behaviour, such as margin squeeze.[96]

4.112 In addition, BT's charges may be significantly above or below costs due to accounting errors rather than pre-determined cost attribution methods. Our approach to these is similar to our approach towards cost reattributions. If the error results in costs moving between regulated markets, we believe a glide path is appropriate in order to maintain regulatory stability. However, if the error results in a material amount of costs moving between regulated and unregulated markets, a starting charge adjustment is likely to be appropriate to ensure that distortions to competition in unregulated services do not persist longer than is necessary.

4.113 In some cases, distinguishing the two types of cost allocation and accounting error, i.e. between regulated and unregulated services and between regulated and regulated services, may be relatively straightforward but in other cases it is not clear-cut. Where the latter applies, our approach is to consider the evidence and apply a regulatory judgement based on the information that is available.

Changes in modelling approach

4.114 As set out in Annex 6, the models that Ofcom uses to set charge controls can be changed over time to reflect better evidence or improved methods of forecasting. We would expect that over time the changes we make to our modelling not to be biased in any particular direction.

4.115 We do not propose to make a starting charge adjustment for such changes to our modelling approach. When setting charge controls, our modelling approach is consulted on and uses the best information and judgement available at the time. However, it is also appropriate to refine and review our modelling approach over time and between market reviews where we believe it will improve the accuracy of our models and forecasts. If we were to make starting charge adjustments based on changes to our modelling approach, this could significantly undermine the stability and predictability of the regulatory regime as there would be significant uncertainty around prices that are charge controlled.

Summary of starting charge framework

4.116 We propose to apply the following principles in relation to starting charge adjustments for Ethernet and TI services:

- distorted pricing signals - we propose to compare BT's aggregate service charges to their costs using 2016/17 forecast data. If charges are significantly above DSAC (or possibly FAC) or below DLRIC, we propose to consider a starting charge adjustment; and
- excessively high or low margins driven by:
    - efficiency and volume changes – we propose to impose a glide path;

[96] The same argument applies if BT allocates costs that are incremental to a regulated service to an unregulated service.

- changes in cost allocations (and accounting errors) between regulated markets – we propose to impose a glide path;
- changes in cost allocations (and accounting errors) between regulated and unregulated markets – we propose to impose a starting charge adjustment; and
- changes in modelling approach – we propose to impose a glide path.

4.117 The application of these principles in Ethernet and TI markets is set out in Sections 6 and 7.

Stage 5: Calculate the value of X for the proposed basket(s) of services

4.118 Having forecast costs for each basket, we then model the value of X required to bring BT's prices at the start of the charge control in line with forecast costs in the last year of the charge control period. This provides us with a value of X for each of the charge control baskets reflecting expected cost reductions and the elimination of any super-normal profits existing at the start of the charge control period.

4.119 If we apply adjustments to starting charges under Stage 4, this would also impact the value of X. For example, if we applied a one-off downward adjustment to the starting charge this would mean that the value of X required to bring prices in line with forecasts costs in the last year of the charge control period would be smaller in absolute terms.

4.120 We outline our specific proposals on the value of X for each charge control basket in Sections 6 and 7 and explain our methodology behind our calculations in more detail in Annex 6.

Consultation questions

Question 4.1: Do you agree with our proposed five stage framework setting out the key economic principles that we propose to take into account in designing our proposed charge controls? If not, what alternative would you propose and why?

Section 5

Proposed approach that applies to both Ethernet and TI services

Introduction

5.1 In this Section, we apply our proposed framework discussed in Section 4 to set out our charge control proposals. These apply to both wholesale Ethernet services at bandwidths up to and including 1Gbit/s in the LP and the RoUK excluding the CLA and Hull area and low bandwidth TI services in the UK, excluding the Hull area. The proposals that are specific to either of these Ethernet or TI services are set out in Sections 6 and 7 respectively.

5.2 We also set out our proposals in relation to how to treat discounts in assessing compliance with charge control basket(s).

Summary of approach

5.3 In summary, in this Section we propose:

- to adopt broad baskets for leased lines services, but separate TI and Ethernet baskets;
- to base our cost forecasts on BT's costs of providing business connectivity services;
- to apply current cost accounting (CCA) fully allocated costs (FAC) as our cost standard;
- that the base year for the 2015 LLCC Model is the financial year 2013/14 and is updated to 2014/15 for the 2016 BCMR Statement;
- to estimate our AVEs and CVEs using Ofcom estimated LRIC to FAC ratios, derived from the outputs of BT's 2013/14 LRIC model;
- to assume flat nominal asset prices (i.e. zero inflation) for assets other that duct and copper, which are valued on a regulatory asset value (RAV)-basis, with pay inflation of 2.5% and other operating cost inflation of 2.6%;
- to use a pre-tax nominal WACC of 10.1% for both Ethernet and TI services; and
- to allow certain, but not all types, of discount to contribute towards BT meeting its charge control obligations.

Stage 1: Identify relevant services and appropriate charge control basket structure

5.4 In Section 4 we set out our principles for basket design. Below we explain why we propose separate baskets for Ethernet and TI services and we set out our proposals

to adopt broad baskets. We set out in Sections 6 and 7 how we have applied our principles to design the specific Ethernet and TI baskets.

We propose to adopt separate TI and Ethernet baskets

5.5 We propose to maintain separate baskets for TI and Ethernet services. This approach is consistent with the Undertakings. A combined basket would require Openreach and BT Wholesale to agree on a set of prices for TI and Ethernet services that is compliant with the requirements of a broad basket. This would require the two divisions to share information[97] in order to inform commercial strategies on pricing, migration and cost recovery. This would conflict with the Undertakings.[98] It could also result in BT Wholesale having a role in setting prices for Ethernet services that it purchases along with other CPs. It could therefore have an incentive to negotiate price changes with Openreach that benefit itself relative to its competitors.

5.6 Furthermore, we also consider the use of separate TI and Ethernet baskets is consistent with our market definition proposals in the May 2015 BCMR Consultation. As discussed in Section 4, there are cases where products in different markets can be put in the same basket, particularly where they share common costs and the intensity of competition is similar. But in this case, we do not consider the competitive conditions and market trends to be similar between TI and Ethernet. As we set out in the May 2015 BCMR Consultation, we consider TI to be a legacy market in overall decline, in contrast to Ethernet where we expect continued growth.[99] We do not expect new demand or competition within the TI segment.[100] We therefore consider that adopting separate baskets is consistent with the differences in competitive conditions and market trends between TI and Ethernet.

5.7 Given these considerations, we do not consider that TI and Ethernet should be combined in a single basket.

We propose to adopt broad baskets

5.8 In Sections 6 and 7 respectively, we apply the framework set out in Section 4 to explain our proposals for implementing broad baskets for both Ethernet and TI services.

Stakeholder comments on basket design

5.9 We received a submission from Vodafone that considered whether the benefits of broad baskets were outweighed by the drawbacks.[101] Vodafone argued that there was limited evidence of BT using basket pricing freedom in a welfare enhancing manner and that, as a rational supplier of SMP products, BT will always act to serve its shareholder interests and maximise profit with no wider consumer welfare benefit. Vodafone argued that BT would profit from pricing flexibility by charging higher prices for products that are more in demand externally and/or that are less competitive.

[97] For example on pricing, costs, forecasts and product development.
[98] See *BT Undertakings.*
[99] Annex 10, May 2015 BCMR Consultation.
[100] Section 5, May 2015 BCMR Consultation.
[101] Vodafone, *Consequences of Charge Control Baskets*, February 2015, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/Consequences_of_charge_control_baskets_Vodafone_February_2015.pdf.

5.10 Vodafone also noted that the potential efficiency gains from Ramsey pricing are low because the differences in elasticities amongst products in the same basket is often minimal, with demand for SMP products frequently determined by other factors like technology shifts and the ease of migrations.

5.11 Given these concerns, Vodafone argued that Ofcom should impose a tighter charge control with smaller baskets. It also said that the continuation of baskets within the control needs to be backed up with a stronger analysis of the benefits they can bring, set against the negative aspects.

5.12 Vodafone also expressed concern that the use of broad baskets could act as a barrier towards the introduction of a volume error correction mechanism, which it considers to be more welfare enhancing as it prevents customers from overpaying for regulated products. This is because applying an error correction to volumes in baskets with multiple services needs to take into account differences in relative as well as absolute volumes. Vodafone, therefore, suggested that basket groupings should be made up of homogenous services, with similar underlying costs, to assist with the introduction of an error correction mechanism.

5.13 We also received a submission from Cityfibre that argued we should impose price floors in the charge control in order to balance short-term efficiencies and investment incentives to CPs and BT. The rationale behind the latter point is that minimum infrastructure prices during the charge control would give investors the confidence necessary to fund the development of fibre networks. Cityfibre also suggested that if price floors led to BT earning excess profits, then measures could be implemented to encourage BT to deploy its profits towards improving and extending fibre infrastructure network in the UK.[102]

Our proposal to adopt broad baskets

5.14 We have considered Vodafone's submission when proposing baskets for the 2016 LLCC. We agree with Vodafone that a broad basket introduces potential risks that BT may charge higher prices for products that are largely purchased by other communications providers (OCPs) or for products that are less competitive. However, as discussed in Section 4 we believe that such risks can be mitigated through the use of sub-caps.

5.15 Regarding Vodafone's arguments around efficient pricing, we believe that BT is in a better position than Ofcom to estimate which tariff structures are most likely to expand output.[103] Leased lines are used for a variety of purposes and by a variety of customers; it is therefore unlikely that all end-users of all leased line services would change their purchasing patterns in exactly the same way in response to a price change.

5.16 Furthermore, setting relative prices of different circuits, e.g. by bandwidth and product, requires consideration of demand conditions, changes in costs (and demand) over time and competition. We consider that BT is better placed than Ofcom to adjust prices in response to changing market conditions. The alternative approach is to set very narrow baskets such that the charge of each and every service would move towards the forecast service-specific FACs. However, it is unlikely that this would represent the most efficient or welfare-maximising pricing

[102] [✂].
[103] We agree with Vodafone that demand for wholesale leased lines is driven by factors other than price, though this does not mean that the variation in elasticities of different products is minimal.

structure, particularly given the inherent pricing rigidity over the control period associated with such an approach.

5.17 In terms of BT's incentives to maximise profits and charge higher prices for products that are less competitive and/or consumed externally, we believe these risks can be mitigated via the use of sub-caps and/or additional remedies. In the case of BT's EAD and EAD LA products, in the May 2015 BCMR consultation we noted that OCPs may face higher costs than BT because they consume proportionately more EAD and might make inefficient network design choices as a result of BT's relative charges for these products. We therefore proposed a remedy to address this concern.[104] Otherwise, however, we consider that there is currently no clear evidence to indicate that BT charges excessive prices for products that are less competitive (though we note that, by design, competitive conditions across the services in our proposed baskets are reasonably homogeneous). For example, since the start of the control it has generally adopted uniform geographic pricing to services that are charge controlled.[105] Furthermore, our analysis in the May 2015 BCMR Consultation indicates that BT has a lower service share in the very high bandwidth segment of the CISBO market, e.g. WDM products and services greater than 1Gbit/s, than at lower bandwidths. However, BT charges significantly higher prices for these services, whereas if it was looking to price in an anti-competitive manner then one might expect it to charge lower prices.

5.18 Regarding Vodafone's arguments on volume error correction, we do not believe such a mechanism is appropriate in the leased line charge control. We discuss this in more detail in Annex 13. We do note, however, that if we were to consider a volume error correction mechanism then it would need to be balanced against the benefits of a broad basket and any implementation issues that may arise.

5.19 In terms of Cityfibre's proposals for price floors, we do not believe these are appropriate for the services we are charge controlling. We agree with Cityfibre that a charge control should achieve an appropriate balance between dynamic, allocative and productive efficiency. We discuss the trade-off between these in Sections 4 in the context of starting charge adjustments. We also consider whether any of BT's current charges are likely to give rise to anti-competitive effects, for example because they are priced below Distributed Long-Run Incremental Cost. We have not found any material evidence for this. Therefore, in the absence of anti-competitive pricing, the main constraints to infrastructure competition are the barriers to entry and economies of scale and scope identified in the May 2015 BCMR Consultation market power assessment.[106] Although a price floor may provide an incentive for BT's competitors to build and expand their networks, this would be at the expense of higher charges for leased line users, reducing productive and allocative efficiency. It is not clear whether this would result in better outcomes for leased line customers and end-users in the long-run. Given the impact of a price floor on productive and allocative efficiency, we do not believe it merits such a risk.

[104] Paragraphs 10.18-10.29, May 2015 BCMR Consultation. We have proposed a remedy to ensure that the differences in EAD and EAD LA charges reflect the differences in long-run incremental costs.
[105] The exception to this, discussed later in this Section, is discounts applied to EAD 1Gbit/s connections in 2013/14 in the WECLA. However, as discussed in the March 2013 BCMR Statement, we found that the prospects for competition in this area were better than in the RoUK, which is why we imposed a safeguard cap.
[106] Annex 13, May 2015 BCMR Consultation.

Stage 2: Determine base year costs

5.20 As set out in Section 4, in formulating our proposals to set the charge control, we need to be able to determine all costs relevant to providing charge-controlled services. We first need to determine the relevant cost standard for which we can establish base year costs. Once we have determined appropriate base year costs, we have a relevant reference point from which we can forecast BT's future costs based on anticipated efficiency gains, volume changes and the estimated impact of volume changes on BT's costs. Below we set out our consideration of:

- whether to base the control on BT's costs of provision or those of another operator;
- the choice of cost standard; and
- the data period used for base year;

5.21 In Sections 6 and 7 we set out our proposals in relation to the technology upon which we base our cost forecasts and in relation to the data period used whether adjustments to the base data are required

We propose to base our cost forecasts on BT's costs of providing business connectivity services rather than those of another operator

5.22 Consistent with Ofcom's typical approach to setting charge controls for BT's services, we propose to base the 2016 LLCC on BT's costs of providing business connectivity services rather than those of another operator. We note Cityfibre's request that "*Ofcom must take inputs from other infrastructure investors to gain a broader picture of the economics of duct and fibre investment*"[107] but in this case at this time we do not consider that it is appropriate to require BT's wholesale customers to pay charges higher than BT's costs of provision as we do not consider such an approach to be likely to generate enough future benefits to outweigh the short term economic efficiency losses associated with such a policy. We also consider that setting charges based on BT's costs encourages other investment where it is efficient – i.e. when the other operators are able to operate at the same or lower cost than BT. In this regard we note that for a number of the services proposed to be covered by the 2016 LLCC, BT already faces competition, albeit to varying degrees, despite historically setting access charges on the basis of BT's costs.

We propose to use CCA FAC as our cost standard

5.23 We set out in Section 4 that our typical approach to setting charge controls for BT is to allow BT to recover the incremental costs of provision plus an appropriate mark-up to allow for the recovery of common costs. We also explained that in the context of determining the appropriate mark-up for common costs for this charge control, there are two main options; the use of CCA FAC or LRIC+EPMU (although, when implemented, the two approaches are fairly similar). While we consider that both the CCA FAC and LRIC+EPMU options could reasonably be used as our cost standard, we have selected CCA FAC for the reasons set out below:

- the use of CCA FAC is consistent with the approach we have adopted for other recent charge controls (such as those set out in the June 2014 FAMR Statement

[107] [✂].

and the June 2014 WBA Statement).[108] Consistency across the regulation of different services provided by BT ensures that BT should have the opportunity to recover its efficiently incurred costs, while minimising the risk of double recovery;

- monitoring BT's actual financial performance on a LRIC basis is not straightforward, as information on wholesale service profitability is generally prepared on a CCA FAC basis. A charge control based on CCA FAC data can be reconciled more easily to BT's RFS, which are audited and are in the public domain;

- there are practicality issues associated with an LRIC+EPMU approach that would involve reviewing BT's LRIC estimates for individual services and ensuring that they provide an appropriate basis for allocating common costs; and

- a LRIC+EPMU approach requires that common costs are allocated in proportion to the LRIC costs of each service, whereas CCA FAC is based on BT's methodology for allocating common costs. As noted earlier, we consider that there can be benefits in allowing BT to determine the most appropriate way to recover common costs, provided we have taken into account the risks identified above.

5.24 Based on these arguments, we propose to use CCA FAC[109] as our cost standard for setting the proposed controls.

The treatment of costs that are common between BT's regulated and non-regulated services

5.25 The CCA FAC cost standard involves allocating all of BT's costs to its services. BT's financial reporting system that generates its CCA FAC information does not identify and specifically allocate different types of common costs, as would be the case under a LRIC+EPMU approach. However, underlying BT's cost structure are incremental and common costs.

5.26 As part of its engagement with Ofcom in advance of the publication of this consultation, TalkTalk made a number of submissions relevant to our use of CCA FAC for this charge control.[110] These submissions relate to how costs that are common between BT's regulated and non-regulated products (what TalkTalk refers to as "*intergroup common costs*" and what we refer to below as IGCCs) should be taken into account by Ofcom when setting regulated charges for leased line products. In particular, TalkTalk maintains that Ofcom should not take any IGCCs into account when setting leased line charges.

[108] Paragraphs 3.14-3.39, Volume 2, June 2014 FAMR Statement and paragraphs 7.117-7.122, June 2014 WBA Statement.
[109] With the RAV adjustment to pre-1997 copper and duct assets as set out in Annex 7.
[110] TalkTalk, *Intergroup common costs*, October 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/TalkTalk.pdf; A report for TalkTalk prepared by Alix Partners, *BCMR Call for Inputs: Common Cost Recovery,* June 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/BCMR_Call_for_Inputs_Common_Cost_Recovery_A_report_for_TalkTalk_by_Alix_Partners,_June_2014.pdf; and TalkTalk, *Allocating IGCCs*, December 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/Allocating_IGCCs_TalkTalk_December_2014.pdf; TalkTalk, *Letter from Andrew Heaney, TalkTalk to David Brown and Marina Gibbs, Ofcom*, June 2014 http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/Letter_TalkTalk_Ofcom.pdf.

5.27 TalkTalk explains that, under its definition, IGCCs will include some proportion of group overhead costs, such as Group CEO, treasury, audit and policy, but will not include costs which are only common between regulated products, such as access network duct costs.[111] TalkTalk notes that only some group overhead costs will be IGCCs because a proportion of these costs will be variable to some degree with the size of the organisation, and therefore can be thought of as an incremental cost rather than common.

5.28 TalkTalk argues that "*it would be most efficient, and in consumers' interests*,"[112] if none of BT's IGCCs are recovered from regulated services, including any leased line markets covered by the BCMR. Rather, TalkTalk argues that BT should recover these IGCCs from its retail activities. This would mean that "*BT would need to recover the standalone cost of its retail activities (both the incremental costs and the IGCCs)*,"[113] which TalkTalk argues would put "*BT in the same position as downstream rivals who have to recover all of their standalone cost from retail products*".[114] Further TalkTalk argue that to the extent BT incurs any IGCCs that are not incurred by its downstream competitors, this must be due to inefficiency or that the costs are not genuinely common. In making these arguments, TalkTalk claims that there is therefore "*no barrier to removing BT's ability to recover IGCCs from regulated charges*".[115]

5.29 We disagree with TalkTalk that departing from the use of BT's CCA FAC, by removing IGCCs from the costs of regulated services, is appropriate in this case. As IGCCs are part of the standalone cost of regulated services, we consider it appropriate that regulated services, which benefit from these costs, share an appropriate allocation.

5.30 In determining the balance of recovery of common costs, there is a trade-off between static and dynamic efficiency. If a regulator's objective is to ensure static efficiency, then it is likely to set upstream regulated charges at a level close to the standalone cost, i.e. including most IGCCs. On the other hand, if more weight is given to dynamic efficiency then it would be appropriate to set upstream charges closer to incremental cost, which is what TalkTalk's approach implies. We generally have regard to both types of economic efficiency when setting charge controls and we do not seek to achieve one solely at the expense of the other. TalkTalk's proposed treatment of IGCCs increases the risk that other CPs are able to successfully compete with BT for non-regulated services despite having costs that exceed BT's long-run incremental costs of providing unregulated services. It therefore risks reducing productive efficiency. Conversely, allowing BT to recover all IGCCs from regulated services, as would be implied by the Efficient Component Pricing Rule, would reduce dynamic efficiency, along with the potential benefits associated with investment, innovation and competition.

5.31 We also need to take into account the interest of BT's competitors in both upstream (regulated) and downstream (unregulated) markets. Under TalkTalk's approach, no IGCCs would be recovered from upstream access markets. Such an approach would have a detrimental impact on BT's upstream competitors. For example, a standalone access provider such as Cityfibre would also need to incur these fixed and common costs, but would have to compete against prices set by BT which excluded any such

[111] TalkTalk, *Intergroup common costs*, paragraph 1.2.
[112] TalkTalk, *Intergroup common costs*, paragraph 2.3.
[113] TalkTalk, *Intergroup common costs*, paragraph 3.9.
[114] TalkTalk, *Intergroup common costs*, paragraph 3.9 and following for its detailed arguments.
[115] TalkTalk, *Intergroup common costs*, paragraph 4.1.

allocation. Such an approach risks resulting in regulated wholesale access prices which could mean that even efficient competitors are excluded, thereby undermining competition in access.

5.32 Striking the appropriate balance between these upstream and downstream considerations, and between static and dynamic efficiency raises practical difficulties for regulators. Our use of CCA FAC in setting charge controls is a pragmatic, rather than an economically precise approach to the recovery of common costs, reflecting the practical difficulties in setting optimal access charges.

5.33 Moreover, in relation to TalkTalk's concerns about IGCCs, as we set out in Annex 7 and the June 2015 Cost Attribution Review, we have undertaken a detailed review of BT's approach to attributing costs within its CCA FAC methodology. This review has identified a number of potentially important changes to BT's cost attributions, in particular in relation to group overhead costs that we consider are appropriate to take into account in setting leased line charges within this charge control. One of the more significant changes that we have identified relates to BT's General Overheads, which includes many of the costs that TalkTalk would consider to be IGCCs. The effect of our proposed changes is to significantly reduce, but not eliminate, the share of these costs recovered from regulated markets. As set out in the June 2015 Cost Attribution Review, we consider that our proposed changes better reflect the accounting principles of causality and objectivity.

We propose that the base year in the 2015 LLCC Model is the financial year 2013/14

5.34 The base year for the 2015 LLCC Model is the financial year 2013/14. We are using BT's 2014 RFS data as they are the most recent fully audited regulatory statements presently available to us in developing our proposals. BT's RFS are subject to independent audit and are supplemented by extensive documentation that explains that basis of preparation.

5.35 For the 2016 BCMR Statement, we propose to update the base year for the charge control model to the financial year 2014/15. If changes in the 2014/15 RFS reflect changes in accounting methodologies, such as cost allocation rules, rather than changes in the underlying costs, we may need to consider if and how it is appropriate to reflect these changes in our base year costs and whether they justify a move away from the methodologies used in the calculations for this consultation.

Stage 3: Forecast costs for the duration of the charge control

5.36 As set out in Section 4, we forecast how costs are likely to change over the duration of the proposed charge control. In the paragraphs below we summarise our proposals in relation to AVEs and CVEs, asset and input price changes and the cost of capital. Our application of our proposed frameworks in relation to making the other forecasts, e.g. volumes, efficiency etc., are discussed in Sections 6 and 7 and Annex 8.

AVEs and CVEs

5.37 The impact that forecast changes in volumes have on forecast costs in the 2015 LLCC Model, before efficiency improvements are taken into account, is determined by AVEs and CVEs. These represent the percentage changes in assets and operating costs respectively for a 1% change in volumes. For example, a CVE of 0.5

means that a 2% increase in volumes is associated with a 1% increase in operating costs.

5.38 We propose to estimate AVEs and CVEs using Ofcom calculated LRIC to FAC ratios, derived from the outputs of BT's 2013/14 LRIC model. A more detailed discussion of our methodology and estimated elasticities is provided in Annex 8.

Input price changes

5.39 The impact that forecast changes in prices have on forecast costs in the 2015 LLCC Model (volume effects and efficiency improvements are taken into account separately) is determined by our estimate of inflation. We have forecast inflation separately for different classes of costs.

5.40 We propose flat nominal asset prices (i.e. zero inflation) for assets other that duct and copper, which are valued on a RAV-basis. We propose pay inflation of 2.5% and other operating cost inflation of 2.6%. A more detailed discussion of our methodology and estimated assumptions is provided in Annex 8.

Cost of capital

5.41 As explained in Section 4, under a charge control, we set the value of X so that we expect the value of BT's rate of return projected for the last year of the charge control to be equal to its WACC.

5.42 We propose to use a pre-tax nominal WACC of 10.1% in the 2015 LLCC Model for both Ethernet and TI services. This is similar to the pre-tax nominal WACC of 9.9% used in the 2013 LLCC.

5.43 Our WACC proposals, and the reasoning for those, are discussed in detail in Annex 9. In summary, we propose that certain WACC parameters are the same as those used in our March 2015 MCT Statement on wholesale mobile call termination,[116] in particular the real risk free rate and equity risk premium. However, we propose a different approach in relation to the asset beta.

The asset beta

5.44 Since 2005 we have separated the BT Group asset beta into two – an asset beta for BT's Openreach copper access operations and another for the rest of BT (RoBT). Since then, charge controls relating to copper access products (e.g. LLU, WLR) have used a WACC derived from the Openreach copper access asset beta while other charge controls, including leased lines, have used the RoBT asset beta.

5.45 Increases to the BT Group asset beta in recent years mean that the RoBT asset beta has also risen. We estimate that that the BT Group asset beta is currently 0.74. With an Openreach copper access asset beta of 0.50 (with a weighting of 25% on Openreach copper) we estimate that the RoBT asset beta would be 0.82, compared to the asset beta of 0.74 used in the 2013 LLCC Statement. For the reasons explained in Annex 9, we consider that an asset beta of 0.82 is likely to overstate the systematic risk attributable to leased lines.

[116] Ofcom, *Mobile Call Termination market review 2015-2018, Statement on the markets, market power determinations and the remedies, 17 March 2015*, http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-call-termination-14/statement/MCT_final_statement.pdf (March 2015 MCT Statement).

5.46 We have therefore considered alternatives to the existing two-way disaggregation of the BT Group asset beta. In Annex 9, we propose a three-way split of the BT Group asset beta between (i) Openreach copper access, (ii) BT's Other UK telecoms services and (iii) RoBT, with the leased lines business falling within what we refer to as Other UK telecoms services. As a result, the new RoBT would largely reflect BT's ICT operations from its Global Services division. The creation of a third disaggregated line of business in this way would result in a notional company that overlapped to a large extent with many of the companies used as comparators to BT.

5.47 We propose that a reasonable range for the asset beta of BT's Other UK telecoms services is 0.55 to 0.75, based on the asset betas of UK, European and US telecoms operators. As explained in Annex 9, in order to ensure that the weighted average asset betas for the three lines of business sum to the BT Group asset beta and in order to ensure a reasonable estimate for the new RoBT relative to ICT comparators, we propose an asset beta of 0.75 for BT's other UK telecoms. This is therefore the value underpinning the WACC for leased lines proposed in this consultation.

5.48 When coupled with the remaining assumptions on gearing and the debt premium, the resulting pre-tax nominal WACC for BT's other telecoms services, including leased lines, is therefore 10.1%.

Stage 4: Consider whether to make starting charge adjustments

5.49 The application of our principals in relation to starting charge adjustments for the Ethernet and TI baskets is set out in Sections 6 and 7 respectively.

Stage 5: Calculate the value of X for the proposed basket(s) of services

5.50 We outline our specific proposals on the value of X for each charge control basket in Sections 6 and 7 and explain our methodology behind our calculations in more detail in Annex 6. In Annex 11, we discuss whether or not we should apply a reallocation of common costs between the TI and Ethernet baskets as we did in the 2013 LLCC.

Treatment of discounts

5.51 Finally in this Section we consider how to treat discounts in assessing compliance with charge control baskets. We explain our proposed approach below.

We propose that time-limited discounts and term products should contribute towards BT meeting its charge control obligations

5.52 The provision of discounts and different tariffs is common in competitive markets. They can often be beneficial for end-users and lead to improvements in economic welfare. For example, where they are used as a form of second or third degree price discrimination,[117] they can increase total output by making products affordable to end-users that would not be willing or able to purchase a product or service if there was uniform pricing.

[117] A firm engages in second degree price discrimination when it charges a different price depending on the quantity purchased. Third degree price discrimination means charging a different price to different customer groups.

5.53 However, in markets where there is a vertically-integrated firm with SMP upstream, discounts at the wholesale level can be used to stifle or otherwise distort competition (both upstream and downstream). For example, by designing a discount scheme that its downstream operation is disproportionately better placed to benefit from, the vertically-integrated firm can enhance the competitive position of its downstream operation through wholesale discounts. Even in circumstances where notionally a discount is available to all downstream operators, the use of conditions or limitations can limit the extent to which certain downstream operators are able to take advantage of it.

5.54 The use of discounts can have distributional impacts beyond those that are anti-competitive in nature. Our proposed charge control places restrictions on BT's overall cost recovery. If discounts are allowed to count towards BT's compliance with the charge control they are unlikely to have material impact on BT's overall cost recovery, but they may change the distribution of cost recovery across customers.

5.55 There are four main types of discounts that BT can offer its leased line customers:

- **volume discounts** – discounts offered on the basis of the volumes bought by the customer;
- **geographic discounts** – discounts offered for services consumed in particular geographic areas;
- **time-limited discounts** – discounts offered for a limited period of time; and
- **term products** –offered for committing to buy a service for a certain period of time, typically beyond the standard contractual period.

5.56 In the May 2015 BCMR Consultation, we propose that BT should be allowed to offer each type of discount for TI and CISBO services, subject to the non-discrimination obligations.[118] We therefore consider here whether such discounts should be allowed to count towards BT's compliance in the charge control.

5.57 In deciding our proposed treatment of the various possible discounts, we have considered the following questions:

- do the potential benefits of discounts outweigh the potential risks associated with them? and
- if we allow discounts to count towards compliance, can the risks (e.g. to competition) be mitigated?

5.58 In the paragraphs below we set out our consideration of these questions, based on the available evidence relevant to them, in respect of each of the four types of discounts set out above.

Volume discounts

5.59 In the March 2013 BCMR Statement, we did not allow volume discounts to count towards BT meeting the charge control. Our reasoning was that BT would be the

[118] Paragraphs 8.72-8.80, May 2015 BCMR Consultation. In the event of an allegation that BT offered unduly discriminatory discounts, we would judge each alleged breach of the no undue discrimination obligation on a case by case basis.

main beneficiary given its high market shares downstream and, therefore, there was a risk such discounts could distort competition downstream. BT has not offered any volume discounts in the current charge control period.

5.60 As Table 5.1 shows below, BT still generally consumes a higher proportion of the key services compared to all other CPs combined.

Table 5.1: Internal/External Rental Volume Split by Product, 2013/14

[✂]

5.61 This evidence suggests that BT would be the primary beneficiary of any volume discounts. This could give it a significant competitive advantage in downstream markets, implying that the risks of undesirable effects on competition associated with volume discounts could be significant. We have not identified an approach to implementing volume discounts that would mitigate these risks. We therefore propose that volume discounts should not count towards BT's charge control compliance.

Geographic discounts

5.62 In the March 2013 BCMR Statement, we allowed BT to offer geographic discounts, but decided that they should not count towards BT's compliance with the charge control. [✂][119]

5.63 Our proposed charge control will apply to all geographic areas in the UK where we have found BT to have significant market power. However, competitive conditions and the costs of provision for wholesale leased lines are not completely homogenous outside the CLA and Hull. Allowing BT to offer geographically differentiated prices could therefore allow BT to legitimately respond to differences in competition and costs.

5.64 Analysis carried out in the May 2015 BCMR Consultation is consistent with the idea that there are areas outside of the CLA, in particular other metropolitan areas, where BT faces more competition. This is shown in Table 5.2.

Table 5.2: Current Service Share Estimates for the BCMR[120]

Market	CLA	London Periphery	CBDs[121] in other cities	Rest of UK (exc. Hull)
Low bandwidth TISBO	63%	70%	88%	94%

[119] BT response dated 5 September 2014 to question A4 of the 1st s135 notice dated 7 August 2014.
[120] Table 4.4, May 2015 BCMR Consultation.
[121] Central Business Districts.

CISBO	44%	48%	47%	56%

Source: Ofcom, May 2015 BCMR Consultation

5.65 On the other hand, it is possible that if geographic discounts are allowed to count towards the charge control then BT would have the ability and incentive to use discounts in an anti-competitive manner in areas where it faced more competition, by cross-subsidising those discounts with higher standard prices in areas without competition while still complying with the control. This could prevent the emergence of sustainable competition in areas outside the CLA, e.g. in metropolitan areas, and Hull.

5.66 We have not identified an approach to implementing geographic discounts that would mitigate these potentially significant risks.

5.67 Based on these risks to competition, we propose that geographic discounts should not count towards the charge control. BT has the opportunity to respond to competitive constraints in certain areas where reducing prices would be self-financing, i.e. the losses from unit margin reductions are outweighed by the gains from increased sales, but our approach restricts BT's ability and incentives to use geographic discounts for anti-competitive reasons.

Time limited discounts

5.68 In the March 2013 BCMR Statement, we allowed time-limited discounts to count towards BT's compliance with the charge control.[122] In 2013/14, for example, BT offered a temporary discount on EAD 100Mbit/s services for a five month period, where the connection fee was waived.[123]

5.69 As we explained in the March 2013 BCMR Statement, such discounts can be used to test the impact of potential permanent price reductions. They also provide BT with some flexibility to make time-limited offers to encourage migration from legacy services.[124]

5.70 In general, we do not consider that time-limited discounts give rise to material anti-competitive or distributional concerns, assuming that they do not have other restrictions. We therefore propose to continue to allow time-limited discounts to count towards BT's compliance with the next leased line charge control.

Term discounts

5.71 Term discounts reduce prices for customers that sign up for longer contracts, either via lower rental charges, lower connection fees or both. Openreach has offered term discounts for five and seven year commitments, but the scale of the discounts has reduced in recent years (this is discussed further below). BT Wholesale [✂][125]

5.72 Term discounts have potential benefits for BT's customers, such as savings in transaction costs, e.g. re-contracting, and, where a discount lowers the upfront

[122] Using annual volumes adjusted for the number of days the offer is available for.
[123] Openreach, *Price List, Ethernet Access Direct (EAD) EAD 100Mb connection special offer*, https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=LNo28YEt6b0mlOac%2BC6kSe0LFpN89kayMbcBVJX5dYST0X3NJZRuttlaA3uml2vze6YShZ82RgLOGLsH2e9%2Bmw%3D%3D
[124] Paragraphs 18.193-18.197, March 2013 BCMR Statement.
[125] BT response dated 5 September 2014 to question A4 of the 1st s135 notice dated 7 August 2014.

connection cost, assisting with potential cash flow constraints. The main anti-competitive risk associated with allowing term discounts is that they may raise barriers to entry or expansion by increasing switching costs because OCPs would be disincentivised from switching away from BT and expanding their own network or switching to an alternative operator. By contrast, BT's downstream operators are unlikely to ever switch from its upstream business.

5.73 Furthermore, if BT downstream is in a stronger position to get its end user customers to commit to longer-term contracts than other operators then it will benefit more from term discounts than other operators and strengthen its position in downstream markets.

5.74 In the March 2013 BCMR Statement, we did not allow term discounts to count towards charge control compliance because of these competition concerns, but we did not stop BT from offering them outside of the charge control if they were self-financing.[126]

5.75 As part of its engagement with Ofcom in advance of the publication of this June 2015 LLCC Consultation, Openreach has argued in favour of allowing term discounts to count towards its charge control compliance.[127] In particular, it believes that around [✂] of their circuits purchased by end customers are sold by CPs on a three year term (with five years more common for backhaul) and it argues that CPs have been asking for a three year term product on access circuits. Openreach has stated that it would like to establish a variant of its EAD 100Mbit/s product with a lower connection price, which would need to be sold on a three year term to ensure payback. It also believes that this would be attractive to smaller CPs who may struggle with cash flow and that other CPs could use the released cash flow and price certainty to fund other investments. Openreach has also argued that it wants to use discounts to compete with other operators and so it would likely result in increased competition downstream and improved investment certainty.

5.76 Openreach has suggested that Ofcom should allow three year term discounts for access products and five year term discounts for backhaul products to count towards its charge control compliance. It argues that offering term discounts in the current regulatory framework would reduce its revenues to below its regulated return. This is because the discounts need to be provided over and above those required by the control.

5.77 We also received two submissions from a CP [✂] in favour of allowing term discounts to qualify within the charge control formula. [✂][128]

5.78 In principle, there are potentially a number of benefits to BT's customers associated with the introduction of term discounts. We also acknowledge that there may be further benefits if greater use of term discounts by BT enhanced competition between Openreach and its competitors.

5.79 Given that both Openreach and its customers would like Openreach to provide term discounts, yet Openreach feels constrained to do so by the approach to charge control compliance, it appears to us that there is a risk that the current charge control

[126] Paragraphs 18.164-18.168, March 2013 BCMR Statement.
[127] BT presentation, *LLCC 2016 Basket Design Discussions*, 3 November 2014.
BT presentation, *Term Discounts and the AI/MI basket(s)*, 5 February 2015.
[128] [✂]

restrictions on term discounts could be preventing benefits associated with such discounts being realised.

5.80 We have therefore considered whether there is evidence to support anti-competitive concerns in relation to term discounts. We start by considering the evidence in relation to the five and seven year term discounts and then consider the case for a three year term discounted service.

Five and seven year term discounts

5.81 In 2013/14, Openreach offered five and seven year term discounts on EAD 1Gbit/s products, where the connection fee for the discounted services was higher than the standard one-year service, but the rental was lower. However, following BT's EAD 1Gbit/s price reductions from 1 April 2014 the term discounts were significantly reduced. [✂][129]

5.82 [✂]. Such a benefit could give BT an advantage when competing downstream and therefore risks distorting competition. Given such a risk, we propose not to allow five or seven year term discounts to be included towards BT's compliance with the charge control, which would allow BT to recover the discounts from other controlled services. However, we will still allow BT to offer them outside of the charge control given that some operators, albeit not a majority, have suggested that five and seven year discounts would be desirable (see Table 5.3 below). Furthermore, as discussed below survey evidence and CP feedback has indicated that five and, to a lesser extent, seven year contracts with end-users are not uncommon, even if they are not the norm.

Three year term discounts

5.83 Given that BT has not historically provided a three year term discount service, we do not have data on historical take-up rates upon which to base our judgements on likely anti-competitive impacts. However, we do have evidence from surveys and information requests sent to Openreach's customers that suggests the case for including 3 year discounts is more balanced.

5.84 We consider the main potential for anti-competitive effects associated with term discounts arises where there is a difference between BT downstream's ability and willingness to commit to the term period and that of its competitors downstream. If BT downstream is typically better able and willing to commit for a term period, then we would expect it to be disproportionately able to benefit from the term discount, thus raising risks of competitive distortions downstream. However, if for a given period such differences are not material, we would not generally expect competitive distortions to be associated with the term discount.

5.85 The willingness of different operators to commit to particular term periods may differ between circuits bought for backhaul purposes and those bought for access services. For example, in the case of access circuits, i.e. circuits that have at least one end terminating at an end-user site, which form the majority of Openreach's circuits, we would expect the maximum term that an operator would be willing to agree to with Openreach would be related to the length of the contract the operator has with its customer. On this basis, unless an operator has a particular ability to influence end customers' contract length preferences, we might expect operators (including BT's downstream divisions) to have a similar willingness to agree to a given term period

[129] BT response dated 5 September 2014 to question A4 of the 1st s135 notice dated 7 August 2014.

with Openreach. Furthermore, if a term period offered by Openreach is less than the typical contract length with end customers, then we might expect operators, including BT downstream, to be similarly willing to take up a term service.

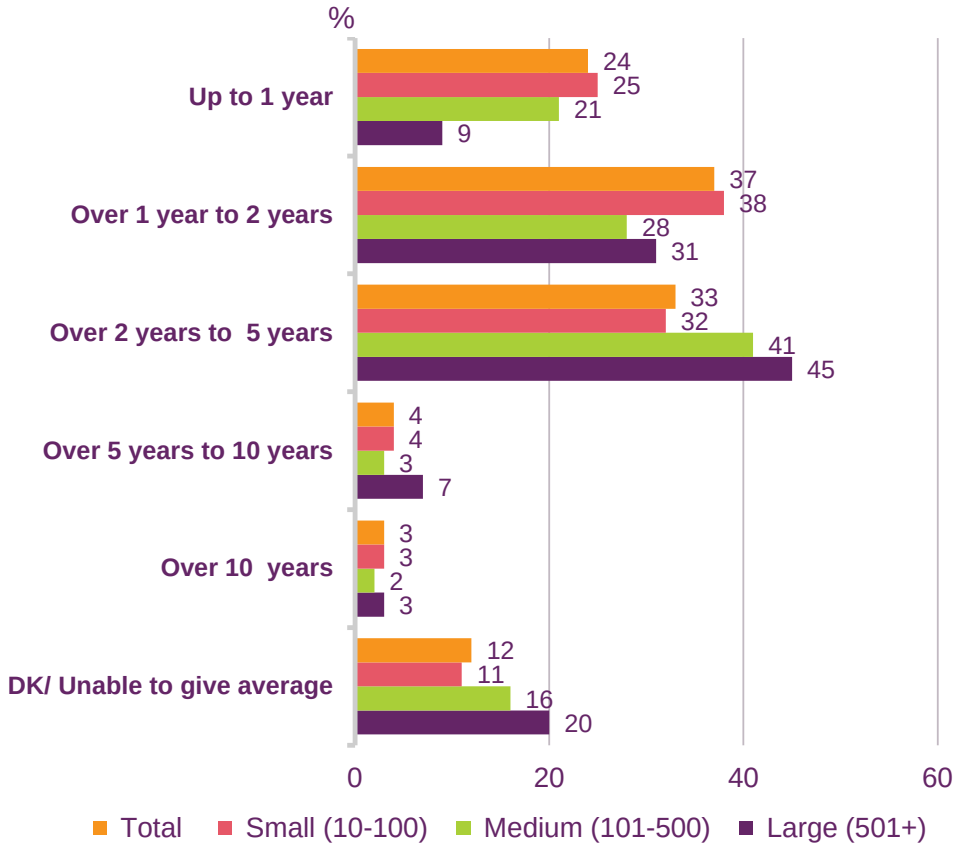
5.86 However, for backhaul circuits there is not the same linkage with end user demand. Rather, operators' willingness to engage in longer term contracts with Openreach are more likely to be affect by, for example, the value they place on keeping open options to switch to other suppliers in the future should Openreach become uncompetitive. In such a case, given that BT downstream is less likely to switch to other suppliers in the future, it is likely to place a lower value on such options and therefore may be more willing than other downstream operators to enter into longer term contract with Openreach. This is consistent with what we observe with Openreach's five and seven year term contracts.

5.87 The key issue for understanding the likelihood of any three year term discount being associated with anti-competitive effects therefore seems to be the extent to which BT downstream is more likely to be willing to enter into such a contract than other downstream operators.

5.88 As part of the BCMR, Ofcom commissioned a survey of businesses on their use of leased lines. The survey was designed to obtain responses from small, medium and large businesses.[130] The results suggest that CP contract terms with business users generally last for up to three years. Figure 5.2 below presents the proportion of respondents taking different contract lengths – if one takes a weighted average, using the mid-points in each range, then the average contract length is 2.6 years for all businesses and 3.2 years for large businesses. This suggests that BT is not significantly better placed than OCPs to benefit from 3 year discounts, although we note that there are still a significant proportion of contracts - almost a quarter - that last up to one year and more than half are less than 2 years. Contracts greater than 5 years are much less common, which provides further support for not including them in compliance.

[130] Section 8.2, A report for Ofcom by BDRC available at: http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/BCMR_2014_report-bdrc.pdf (BDRC Survey)

Figure 5.2: Typical length of a Business Connectivity Service Contracts



Base: *All respondents naming a BCS supplier (Total n=580; Small n=179; Medium n=217; Large n=184 (multiple coding as respondent was asked about each company used))*

Question: *QG1 From start to end, how long is your current business connectivity service contract with [SUPPLIER]*

Source: BDRC Survey

5.89 We have also issued informal requests to other CPs regarding their interest for term discounts. Responses to these are summarised in Table 5.3 below. The majority have expressed an interest in three year term discounts, which appear to be the typical contract lengths, with many CPs interested in having the connection cost spread over the contract term.

Table 5.3: Summary of CP responses on term discounts

[✂]

Restrictions

5.90 Based on the above evidence, we propose to allow three year term products to count towards BT's charge control compliance. However, we also propose to apply some

restrictions to mitigate the risk of gaming and the possibility of undesirable distributional impacts, whereby prices for customers on shorter-term contracts are significantly higher than those on three year contracts. We discuss these restrictions below.

5.91 Our standard approach to the introduction of new services that wholly or substantially replace an existing service is that they fall within the scope of our charge control (see Section 10).[131] In practice, BT could either treat the term product as a new product (e.g. 'EAD100M-3yrs') or it could be treated as a variant of the standard one year product. In both cases we expect compliance to work in the same manner, i.e. BT would comply using prior period revenue weights. This would mean that in the first year of the new control, BT would have complete flexibility when setting the discounted rate.

5.92 However, if there are no constraints on BT's ability to change the balance between the standard and discounted offer, this could have undesirable distributional impacts if certain customer types pay relatively higher prices than others. In order to mitigate this risk we have identified two potential options.

5.93 The first option is to set a threshold on the size of the discount that BT can offer, for example the discounted rental cannot be more than a certain percentage lower than the standard rental. This is relatively straight forward to implement but setting the threshold would require judgement.

5.94 The second option would be to set a limit based on the three year total cost of ownership (TCO), whereby we impose a restriction that the total cost of a three year term should be related to the combined connection and rental cost of a standard one year product that is consumed over three years.

5.95 We propose to implement the second option, given that BT and other CPs have primarily expressed interest in a specific pricing structure whereby connection costs are spread over a three year term. This helps to mitigate the risk of negative distributional impacts and regulatory gaming but, unlike the first option, it does not require a quantitative judgement on the extent to which prices should be restricted.

5.96 We therefore propose that BT should face a requirement to ensure that, at all times, its three year term product price should reflect the cost of a one year connection charge plus three times the annual rental charge, for the equivalent standard one year term product.[132] We refer to this below as our proposed TCO restriction. Furthermore, given the restriction ensures that the TCO is the same for a three year term as a one year term (over three years), we refer to three year term '*products*' rather than '*discounts*'.

Proposed TCO restriction

5.97 In order to ensure that customers consuming three year term products benefit from the charge control, we also propose that such customers will benefit from reduced charges during their three year contract if BT reduces the price of the standard

[131] Paragraph 24.38, March 2013 BCMR Statement.

[132] We recognise that our proposed approach to calculating a three year TCO that is equivalent to the purchase of a single year product over three is a simplification that does not, for example, reflect any additional financing costs BT may face associated with offering the three year term product. However, we consider that this simplification is appropriate given the benefits in terms of compliance complexity and transparency.

product. To illustrate why this is necessary, suppose that BT offered a three year term product in the first year of the control that was taken by all of its customers. If the rental charge was fixed over the next three years and BT did not have any new connections, then BT's revenues would not fall during the control period and so it would not comply with the charge control.[133]

5.98 There are different ways in which our proposed TCO restriction could be implemented. We consider that there is a trade-off between having a clear compliance framework, which limits the ambiguity about what BT needs to do in order to comply, on the one hand and, on the other, giving BT the flexibility to adjust the structure of three year term charges, perhaps reflecting customer preferences. One option, in order to maintain a simple and transparent compliance formula, is that the TCO restriction could tie the three year term charge to the standard charge in such a way that, at any given time, the three year term product should have no connection charge and the annual rental should be the three year TCO of a one year product divided by three.[134] This is relatively straight forward to implement in compliance terms and it also ensures that reductions in one year term charges are passed through to customers in three year contracts.[135]

5.99 Another option is giving BT flexibility to vary the connection and rental charges of the three year term. For example, instead of having no connection charge it could set an upfront charge, albeit one that is lower than the standard product. Also, instead of assuming that the rental in each of the three years would be the same, absent any changes in one year charges that would subsequently feed through, BT could charge a different rental in years 1, 2 and 3 of the contract. This flexibility might allow BT to offer three year term products that are better suited to the needs of customers. However, the disadvantage is that it is much more difficult to enforce in compliance terms and it might not control the difference between one year term and three year term charges as tightly as the first approach.

5.100 As discussed above, the evidence we have obtained from BT and other operators suggests that the majority of demand for three year term products stems from operators wanting to spread connection charges over a three year contract term in order to ease cash flow constraints. We consider that both of the options set out above mitigate the risk of undesirable distributional impacts while allowing BT and its customers to realise the benefits. We therefore consider that the first approach has an additional benefit in that it is straightforward to implement and it provides a compliance framework that is transparent and relatively easy for BT and its customers to understand.

[133] An alternative option would be for BT to reduce the annual rental for three year term products separately, in order to comply with the charge control. However, if the reduction in three year term charges is not tied to reductions for the standard products then BT may set higher overall charges for the latter (over a three year period), which we do not consider to be desirable.

[134] For example if the standard connection charge was £900 and the rental was £2,000, giving a 3 year TCO if £6,900, then the annual rental for the three year term would be £6,900/3=£2,300.

[135] For example, suppose a customer purchased a three year product in the first year of the control and the annual rental that year was £2,300. In the second year of the control, BT reduces the one year connection to £600 and the one year rental to £1,800. The annual rental of the three year term should now be (600/3) + 1800 = £2,000. This will be paid by both new customers and existing customers on three year term products; so the customer that purchased a three year product in the first year and paid £2,300 would pay £2,000 in the second year. Similarly, if further reductions were made in the third year of the control, these would also pass through to new and existing three year term customers.

5.101 We therefore propose to implement the first option so that at any given time during the control, a three year term product should have no connection charge and the rental should equal the three year TCO of a one year product divided by three. This means that, at any given time, there is only one (rental) charge for a three year term product and it is the same for all customers on three year contracts, i.e. both new and existing customers.

5.102 We recognise that this is only one approach to implementing the TCO restriction and therefore we welcome views from stakeholders on alternative approaches that would achieve our objectives of mitigating the risks of gaming and undesirable distributional impacts while being straightforward and transparent from an implementation and compliance perspective.

Treatment of discounts in starting prices

5.103 In the discussion above we proposed that time-limited and three year term discounts should count towards compliance with the charge control cap but that other discounts should not. As BT has been offering discounts during the current charge control period, even though they have not been allowed to contribute to charge control compliance for the current period, we need to consider whether to take such pre-existing discounts into account in the starting revenues for the coming charge control period.

5.104 We set the value of X for the price cap so as to bring revenues into line with costs, including a return on capital, by the final year of the charge control. If we were to ignore discounts prevailing in the starting revenues, then it is possible that the charge control may require BT to reduce its prices to below its cost, including the cost of capital, over the control period.

5.105 A potential drawback of taking discounts into account is, however, that if BT were to reverse or remove its existing discounts, then it may be able to reduce prices by less than required under the charge control. BT could then earn more than its cost of capital by the end of the charge control period. This risk could arise if reducing the level of the discount would have little impact on volumes.

5.106 The relevant prices for setting the charge control are those we expect to be in place at the start of the next charge control period. Based on the evidence available we consider the charges that will be in place at the end of the current control period (i.e. 31 March 2016) are likely to be the best estimate. We set out how we have derived these charges in Annex 6. However, for both Ethernet and TI controlled services, our analysis of BT's current discounts implies that the difference between gross and net revenues, i.e. those with and without discounts, is immaterial.

5.107 Nevertheless, we propose not to include discounts in BT's prices when forecasting basket revenues. This is to ensure consistency with our policy on discounts in the March 2013 BCMR Statement. We are also mindful of the risks of over-recovery from unanticipated removal of the limited discounts currently in place.

Summary of proposals for discounts

5.108 Based on the analysis set out above, we therefore propose the following in relation to discounts:

- volume discounts will not count towards compliance;

- geographic discounts will not count towards compliance;
- time limited discounts will count towards compliance;
- only three year term products will count towards compliance; and
- discounts will not be included in our starting charges.

Consultation questions

Question 5.1: Do you agree with our proposal to adopt broad baskets for leased lines services, but separate TI and Ethernet baskets? If not, what alternative would you propose and why?

Question 5.2: Do you agree with our approach to deriving our base year costs for Ethernet and TI services, including:

a. our proposal to forecast costs based on BT's costs of providing business connectivity services;

b. our proposal to apply CCA FAC as our cost standard; and

c. our proposal that the base year for the 2015 LLCC Model is the financial year 2013/14 and that our base year for the model for the 2016 BCMR Statement should be the financial year 2014/15?

If not, what alternative would you propose and why?

Question 5.3: Do you agree with our approach to forecasting costs and revenues over the period of the charge controls for Ethernet and TI services, including:

a. our AVEs and CVEs assumptions;

b. our input price inflation assumptions; and

c. our WACC assumptions?

If not, what alternative would you propose and why?

Question 5.4: Do you agree with our proposals in relation to the types of discount that would contribute towards BT meeting its charge control obligations for Ethernet and TI services? If not, what alternative would you propose and why?

Section 6

Proposed controls for Ethernet services

Introduction

6.1 In this Section we set out our proposed charge controls for Ethernet services, which include wholesale CISBO services up to and including 1Gbit/s that are provided outside the CLA and Hull. In particular, we explain our proposals with regard to:

- the scope and design of charge control basket;
- deriving our base year costs, including the technology assumed for supplying controlled Ethernet services for modelling purposes, our proposed cost adjustments to BT's 2013/14 RFS data to form the base year and our proposed treatment of BT's costs related to QoS;
- our approach to forecasting costs and revenues over the period of the charge control, including:
  - our volume forecasting assumptions;
  - our efficiency forecasting assumptions;
  - our proposal to reflect the impact of the proposed dark fibre remedy;
- making starting charge adjustments;
- the range and base case for the value of X; and
- the need for sub-caps and/or sub-baskets.

6.2 This section follows the proposed framework for charge control design set out in Section 4. It also builds on the proposals made in Section 5 and summaries the proposals in relation to Ethernet services.

6.3 Further details of how we have estimated costs and revenues can be found in Annexes 6-9.

Summary of key proposals

We propose a single Ethernet basket controlled at CPI-13.75% with sub-cap and sub-basket controls

6.4 We propose a single charge control basket covering CISBO services up to and including 1Gbit/s outside the CLA (the Ethernet basket). We propose that the price cap for this basket should be in the range CPI-9.75% to CPI-17.75%, with a proposed base case of CPI-13.75 %.[136]

[136] As set out below, we also propose to make adjustments to the starting charges for the control. Our proposed value of X of -13.75% is in addition to these starting charge adjustments.

6.5 We are also proposing sub-baskets and sub-caps where we believe that the overall basket cap would not offer sufficient protection to customers. Table 6.1 below summarises our proposals with further details about the specific services falling within this proposed Ethernet basket, together with our proposed sub-cap and sub-basket constraints, based on our value of X.

Table 6.1: Proposed controls on the Ethernet basket

Basket	Services within scope	Basket cap	Sub-cap and sub-basket constraints
Ethernet basket	Connection, rental and main link charges for: Wholesale CISBO services up to and including 1Gbit/s outside the CLA Interconnection services Ethernet ancillary services (excluding ECCs and TRCs)	CPI-13.75%	Sub-basket for EAD 1Gbit/s (CPI-13.75%) Sub-basket on main link charges (CPI-13.75%) Sub-basket on interconnection services (CPI-13.75%) Sub-cap on all charges (CPI-CPI)

Source: Ofcom

We propose to make a starting charge adjustment

6.6 Following the principles set out in Section 4, we propose to make a starting charge adjustment of -9% to charges in the Ethernet basket. We propose to provide BT with flexibility to implement this adjustment, subject to the sub-basket and sub-cap constraints we set out, as this is consistent with our proposal to implement a broad basket. BT will therefore not be required to reduce the price of each and every charge by 9% at the start of the control; rather the weighted reduction should equal this amount.

Summary of approach

Our proposed controls are based on our forecasts of revenues and costs over the control period

6.7 We set out in Sections 4 and 5 and Annexes 6-11 the design of our charge control and the details of how that design is implemented. However, in broad terms we set the proposed value of the X so as to bring forecast revenues into line with forecast costs in the final year of the charge control.

6.8 Our proposed cost forecasts start with detailed regulatory financial reporting information from BT for our modelling base year of 2013/14. We then forecast how the different types of costs for Ethernet services might vary with respect to the underlying volume changes, subject to assumptions such as efficiency, input price changes and the WACC.

6.9 We have calculated what the revenues would be at the end of the charge control by multiplying our forecast service volumes by their respective charges at the start of the control, absent any charge changes over the control period. We have then calculated the value of X to close the gap between these revenue and cost forecasts.

We propose to adopt the MEA approach to modelling certain legacy Ethernet services

6.10 We propose to adopt the MEA approach for modelling legacy Ethernet services up to and including 1Gbit/s. This means that we model legacy Ethernet services based on the most efficient technology that delivers the same service, to the same level of quality and to the same group of customers; namely Openreach's more recent Ethernet Access Direct (EAD) technology.

6.11 This approach is consistent with that adopted in the March 2013 BCMR Statement. However, we do not propose to provide BT with any allowance for transition costs as we allowed for these costs in full in the 2013 LLCC.

We propose adjustments to BT's base year costs in 2013/14

6.12 We propose adjusting the cost data provided by BT to ensure that these are representative of the relevant level of costs for forward-looking charge control purposes, while remaining consistent with the principle of cost recovery. Those adjustments provide a suitable basis for forecasting costs for the purposes of setting the charge control.

6.13 For example, we have corrected mathematical/input errors in the data provided. Another example is the RAV adjustment where we have adjusted Copper and Duct Access assets to a RAV basis. This ensures we have consistently used the RAV basis in determining regulated charges so as to allow BT the appropriate level of cost recovery for these assets.

We propose to take improvements in BT's QoS into account in forecasting costs

6.14 We propose to allow BT to recover its efficiently incurred quality of service costs from the charge control. We have made two broad adjustments to BT's cost base in order to reflect the changes to BT's QoS expected over the control period:

- an uplift to the 2013/14 base year costs[137] to reflect the additional provisioning resources BT is putting in place to improve performance as part of its QoS improvement programme; and

- a reduction in the 2013/14 base year costs to reflect the forecast reduction in penalty payments BT will pay to its customers under the Service Level Agreement (SLA)/SLG regime for poor provisioning performance, when QoS improves.

We propose to forecast significant Ethernet volume growth until 2018/19 but expect some cannibalisation by the proposed dark fibre remedy

6.15 We have generated volume forecasts for Ethernet and other CISBO services which show significant volume growth, particularly for bandwidths of 100Mbit/s and higher. This is likely to be driven by increasing demand for bandwidth-intensive activities and

[137] We include an adjustment to BT's base year costs to reflect the additional resources it is deploying now to improve quality of service. We do not propose to make further adjustments in later years of the control period, but rather will forecast how the adjusted base year costs will evolve over time consistent with our general modelling approach.

applications, the deployment of next generation access (NGA) and 4G mobile networks and the lower unit cost of Ethernet.

6.16 We also propose to adjust the Ethernet volume forecasts to take account of the potential availability of the proposed dark fibre as this remedy would be likely to affect the volume of active Ethernet circuits BT will sell in this review period. For this consultation we have proposed the following cannibalisation rates:

- 50% cannibalisation of new connections (and associated rentals) for EAD, EAD LA and OSA circuits at 1Gbit/s and above in the second year of the control (the first year that the proposed dark fibre will be commercially available); and
- 100% cannibalisation of new connections (and associated rentals) for EAD, EAD LA, and OSA circuits at 1Gbit/s and above in the final year of the control (in other words, we assume no new connections for these circuits).

We propose an efficiency assumption of 4% to 7% for Ethernet services

6.17 We propose an appropriate efficiency range for the provision of Ethernet services of 4 to 7% with a base case assumption of 5%. This is based on a consideration of various sources of evidence.

We propose to make certain adjustments to our cost and revenue forecasts to reflect the proposed dark fibre remedy

6.18 We believe that the cannibalisation of active circuits sold by BT is likely to affect BT's ability to recover its efficiently-incurred costs, particularly those costs that are non-avoidable, i.e. they are still incurred regardless of whether the proposed dark fibre is being supplied instead of an active circuit. We therefore propose to make two adjustments to our cost and revenue forecasts to ensure that BT has the opportunity to recover its costs:

- uplift the Ethernet basket cost forecast to reflect cannibalisation of active circuits by the proposed dark fibre to ensure BT recovers its efficiently incurred costs; and
- include passive development costs in the Ethernet basket.

Stage 1: Identify relevant services and appropriate charge control basket structure

6.19 In Section 5 we explain our proposal to have separate baskets for Ethernet and TI services. In this sub-section we set out our proposals in relation to basket design for Ethernet services.

6.20 We propose a single charge control basket, the Ethernet basket, for the following groups of services:

- wholesale CISBO services up to and including 1Gbit/s outside the CLA – for connection, rental and main link; and
- Ethernet ancillary services (excluding ECCs and TRCs) outside the CLA.

6.21 In addition, we propose the following sub-baskets[138] and sub-caps[139] within the Ethernet basket where we believe that further safeguards are necessary to effectively control the prices of certain services. They are:

- a sub-basket on 1Gbit/s EAD services;
- a sub-basket on Ethernet Main Link charges;
- a sub-basket on Interconnection services (i.e. BTL); and
- a sub-cap on all charges within the Ethernet basket.

6.22 We discuss these proposed sub-baskets and sub-caps below.

6.23 As set out in Section 4, in determining the design of charge control baskets, we have sought to address the following considerations:

- **efficient charging structures** – where the services being considered share substantial common costs, a single basket is more conducive to efficient charging structures and cost recovery;
- **competition** – where the services being considered face different competitive conditions or where BT does not use the same wholesale inputs as its rivals, placing them in the same charge control basket may give BT an incentive to set prices in a way that undermines competition. In this case, we consider introducing sub-caps or placing the services in separate baskets;
- **migration incentives** – where it is appropriate for BT to encourage migration from a legacy service to a more efficient service, placing the services in the same basket would allow BT the required pricing flexibility; and
- **consistency with other rules** – our design of baskets should take into account other rules and ensure that it does not require BT to breach these other rules.

6.24 We discuss the first three of these considerations below and explain the case for a broad Ethernet basket.

We propose a broad Ethernet basket

6.25 We propose to have a basket that includes all Ethernet services at bandwidths up to and including 1Gbit/s.

Efficient charging structures

6.26 Ethernet services of different types and across different bandwidths are likely to share substantial common costs. As set out in Section 4, our preference is to provide BT the incentive to recover common costs in the most efficient way by placing the services in a single charge control basket. If we were instead to create separate baskets for different types of Ethernet service or for each bandwidth, or even for each individual charge, we would have to decide on the appropriate allocation of common costs to be recovered within each basket. Given the complexity of identifying the appropriate pattern of common cost recovery, particularly for a large number of

[138] We use the term 'sub-basket' when referring to a control on a group of two or more charges.
[139] A 'sub-cap' refers to a control on a single charge.

services, and the benefits of having a degree of flexibility should this pattern change over time, we consider that it is appropriate that BT is afforded some flexibility to identify the appropriate way for these costs to be recovered.

6.27 We therefore consider that the promotion of efficient charging structures and cost recovery would suggest it is appropriate to design a broad basket for Ethernet services.

Competition

6.28 In the May 2015 BCMR Consultation, we propose a market for wholesale CISBO services, which encompasses Ethernet and WDM services of all bandwidths.[140] We note in the May 2015 BCMR Consultation that, within this market, BT earns higher margins on very high CISBO services than it earns on medium and high CISBO services. This has made it easier for OCPs to win business at the higher bandwidth ends of the market and this in turn is reflected in variations in service share by bandwidth. On the one hand, the high margins suggest that there could be a concern about the risk of excessive pricing but, on the other, while these margins persist, there may be potentially greater prospects for competition and infrastructure investment for very high bandwidth CISBO services, i.e. WDM services and leased lines above 1Gbit/s. In addition, our intention is that competition based on passive remedies should provide the primary constraint on prices for very high CISBO services, rather than a charge control. These differences have been reflected in the charge control remedies that we propose in the May 2015 BCMR Consultation, for example, BT's WDM services and Ethernet services above 1Gbit/s outside the London Periphery will be subject to a safeguard cap and so are not included in our charge control basket.[141]

6.29 If there were substantial differences in the extent to which different bandwidth services were sold to internal and external customers, such that BT did not consume the same wholesale inputs as its rivals, this may be another reason for considering placing the services in different charge control baskets. Where there are substantial differences in purchasing patterns, BT may have an incentive to concentrate price cuts on internally consumed products and discriminate against external customers, leading to a distortion in competition, if the services were placed under a single basket cap.

6.30 However, as discussed in Section 4 we believe this risk can be mitigated by the use of sub-baskets and sub-caps within a broad basket. This has the benefit of preventing BT from setting excessive charges while, at the same time, retaining the benefits of pricing flexibility. We discuss our sub-basket and sub-cap proposals later in this section.

Migration incentives

6.31 We consider that it is appropriate for Openreach to have the flexibility to adjust the relative price of legacy and new Ethernet service charges to promote efficient migration. The decision over whether to migrate to a new Ethernet service is made by customers and Openreach may therefore need to adjust relative prices in order to encourage migration where it is efficient to do so. Such changes to the relative prices

[140] Section 4, May 2015 BCMR Consultation.
[141] Paragraphs 8.188-8.199, May 2015 BCMR Consultation and draft SMP Condition 58, Annex 15, June 2015 LLCC Consultation.

of services may require the two types of service to be placed in the same charge control basket.

6.32 This is also consistent with our proposals to adopt the MEA approach to pricing, which involves modelling legacy services, such as Wholesale Extension Service (WES) and Backhaul Ethernet Services (BES), on the basis of the most efficient way of delivering the service. If the services were kept in separate charge control baskets, the ability of Openreach to set relative prices would be restricted. Therefore, we consider that allowing for migration incentives supports the case for having a broad Ethernet basket.

Consistency with other rules

6.33 The fourth consideration, consistency with other rules, is discussed in Section 5 in relation to our proposals to have separate TI and Ethernet baskets. This is an important consideration in our decision to have separate TI and Ethernet baskets, as discussed in Section 5. However, it is not a relevant consideration for determining basket design for Ethernet services only, because these pricing decisions are all made by Openreach.

Provisional conclusion

6.34 We propose to adopt a broad Ethernet basket covering the main controlled Ethernet services provided by Openreach. This is because we consider that competitive conditions in the provision of low, medium and high bandwidth CISBO are broadly homogeneous, so we do not have serious concerns that BT could have a distorted incentive to cut prices more where it faces more competition.[142] In addition, a single basket is more conducive to efficient pricing and cost recovery and would allow Openreach to use prices to provide customers with incentives to migrate to lower-cost products. A single basket for Ethernet services at up to and including 1Gbit/s is also consistent with our proposals for passive remedies.

6.35 Within this broad basket, we have considered the need for any sub-baskets or sub-caps. Our consideration of these is significantly influenced by the potential impact of our proposed dark fibre remedy and so we discuss sub-baskets and sub-caps below, after we have set out our proposals in relation to the proposed dark fibre remedy in Section 8.

Stage 2: Determine base year costs

We propose to adopt an MEA approach for certain legacy Ethernet services

6.36 In Section 4 we set out our approach to determining the technology used in 2015 LLCC Model as a reference to set charges. In this sub-section, we apply this framework to the services in the Ethernet basket by addressing the following questions:

- can we identify the MEA for delivering the service in question?
- can we calculate robust cost estimates for the services based on the MEA?

[142] Section 4, May 2015 BCMR Consultation.

- would the use of the MEA allow an efficient operator the opportunity to recover its costs? and

- does the MEA give appropriate migration signals to consumers?

6.37 In the March 2013 BCMR Statement, we identified EAD as the MEA for Ethernet services up to 1Gbit/s and modelled WES, WEES, and BES as having the same costs as the equivalent EAD circuit. In what follows we first consider the changes in the technology used by Openreach to provide Ethernet services that have occurred in recent years, we then set out the conclusions we reached in the March 2013 BCMR Statement, and finally we present our current views for this charge control period.

Ethernet technology changes

6.38 The technology to provide dedicated Ethernet on fibre or wavelengths has been around for many years. Openreach started introducing Ethernet products in 2000 starting with LAN Extension Service (LES). Then Openreach introduced WES, Wholesale end-to-end Extension Service (WEES) and Backhaul Extension Service (BES). In 2008 Openreach introduced EAD and Ethernet Backhaul Direct (EBD).

6.39 Openreach's current portfolio for Ethernet services at and below 1Gbit/s includes WES/WEES/BES, EAD and EBD.[143] Openreach has encouraged a sizeable proportion of customers using various legacy technologies up to and including 1Gbit/s to migrate to EAD services.[144] Further, it also withdrew certain bandwidths of WES/WEES and BES circuits from new supply in June 2011; only EAD services are now available for new supply at these speeds.

March 2013 BCMR Statement

6.40 Our views in the March 2013 BCMR Statement can be summarised as follows:

- we believed that EAD services could be identified as the MEA for delivering the legacy WES/WEES/BES services at or below 1Gbit/s.[145] We concluded that EAD can deliver the same services to the same level of quality and to the same customer base as WES/WEES/BES at or below 1Gbit/s.[146] but at lower cost.[147] However, for the services above 1Gbit/s we set prices based on the existing WES and BES technologies;

[143] When discussing the choice of technology, we use EAD to refer to all variants of the EAD product (including EAD LA, EAD Extended Reach, EAD Enable etc.); see Annex 15.
[144] For example, Openreach has offered reductions on EAD connection fees for CPs migrating from legacy Ethernet products; Openreach, *Price List, WES/WEES – EAD migration offer*, https://www.openreach.co.uk/orpg/home/products/ethernetservices/legacymigrations/specialmigrationconnectionoffer/specialmigrationconnectionoffer.do
[145] EAD is a better substitute for BES than EBD because BES connects any network site to any other network site, as EAD can also do, while EBD is only configured between Openreach sites (Access Serving Node to Openreach Handover Point).
[146] Paragraphs 20.123-20.127, March 2013 BCMR Statement. We also noted that EAD appeared to include additional functionalities as well.
[147] For example, at the end of January 2011, Openreach announced the withdrawal of WES, WEES and BES, up to an including 1Gbit/s, from new supply (from June 2011) as these "*have been superseded by Ethernet Access Direct (EAD), a more flexible, cost-effective and future-proof access option*"; Openreach, *Fact sheet: Withdrawal of WES, WEES and BES,* http://www.openreach.co.uk/orpg/home/products/ethernetservices/wholesaleextensionservices/wes/downloads/WES_BES_WEES_withdrawal_fact_sheet.pdf

- we had sufficiently robust cost estimates for the services based on EAD. As EAD products had been sold by Openreach for the duration of the prior charge control, we considered that the cost data were sufficiently detailed and stable for us to make projections of relevant costs;[148]

- we found that the MEA approach for Ethernet services should be consistent with an efficient operator having the opportunity to recover its costs.[149] The transition from legacy to new Ethernet services had taken place over two charge controls. Although BT faced costs associated with the parallel running of two networks, we considered that the adoption of the anchor pricing approach in the July 2009 LLCC Statement, as well as the transition cost adjustment (which is explained further below) and the use of a glide-path in March 2013 BCMR Statement, allowed BT the opportunity for cost recovery;[150] and

- we considered that the adoption of the MEA approach would be consistent with giving appropriate migration signals to customers.[151] Through our basket design we gave Openreach the flexibility to migrate customers from legacy to newer Ethernet services where it was efficient to do so. We also allowed for the transition costs associated with migrating customers from the legacy to newer Ethernet services.

6.41 In March 2013 BCMR Statement, we considered whether we needed to take into account holding losses or transition costs associated with the transition to new Ethernet services to give Openreach the opportunity to recover its efficiently incurred costs. Based on information provided by Openreach, we did not consider that there were holding losses arising from adopting the MEA approach.[152] But we did take into account a transition cost adjustment which allowed Openreach to recover the costs of installing new EAD circuits to replace the legacy WES and BES circuits.

We propose to use an MEA approach for Ethernet services at or below 1Gbit/s

6.42 We consider that the broad reasoning we set out in the March 2013 BCMR Statement, and is summarised above, remains valid for the forthcoming charge control period:

- we continue to believe that EAD services can be identified as the MEA for delivering the legacy WES/WEES/BES services at or below 1Gbit/s;

[148] For example, see paragraphs 20.191-20.194, March 2013 BCMR Statement. In fact EAD services include additional features such as enhanced diagnostics and Resilience Option 1. We noted (see paragraph 20.129 and then paragraphs 20.191 to 20.194) that we could reduce the costs to reflect this, but we believed that the reduction would be small relative to the overall cost of the circuit. Furthermore, to carry out such an analysis would require significant additional information on the marginal costs of these additional functionalities as well as customers' valuation of them. We did not believe such an analysis was likely to change our results significantly.
[149] For example, see paragraph 2.132, March 2013 BCMR Statement.
[150] For example, see paragraphs 20.218-20.222, March 2013 BCMR Statement.
[151] For example, see paragraph 20.153, March 2013 BCMR Statement.
[152] For example, see paragraphs 20.223-20.228, March 2013 BCMR Statement. We note that for WES and BES services provided prior to 2010/11, the equipment and installation costs were allocated to connections. However, Openreach explained that those Ethernet services use more fibre than EAD, and so the adoption of the MEA approach means that fewer fibre costs can be recovered. We considered that this does not constitute a holding loss, as the fibre costs are common with other services (including EAD) and would be reallocated and recovered from other services, rather than written-off.

- we continue to have sufficient regulatory financial reporting information upon which to calculate robust cost estimates for EAD at or below 1Gbit/s. As an established portfolio of services, BT has published detailed cost information on EAD services at or below 1Gbit/s for a number of years;[153]

- we remain of the view that the use of anchor pricing for the legacy Ethernet services at or below 1Gbit/s in the July 2009 LLCC Statement, in conjunction with our treatment of transition costs in the March 2013 BCMR Statement, means that the use of the MEA approach for Ethernet services below 1Gbit/s is consistent with Openreach having an opportunity to recover its efficiently incurred costs; and

- we continue to consider that the MEA approach, in conjunction with our basket design proposals set out below and the transition cost adjustment provided in the March 2013 BCMR Statement is consistent with allowing Openreach to give appropriate migration signals to customers. Indeed, over the current control period Openreach has continued to successfully migrate customers from the legacy Ethernet services to the newer EAD services. In 2013/14, the total number of WES circuits fell by just over 20% while the number of BES circuits fell by around 15%. By 2018/19, they are forecast to decline by [✂] respectively.

6.43 We therefore propose that we should adopt the same MEA approach for Ethernet services up to and including 1Gbit/s as we adopted in March 2013 BCMR Statement.[154] However, we propose not to allow for transition costs in this charge control period as we allowed for these costs in full in the previous charge control. We see no reason why a further allowance is required in this control period, consistent with our view in March 2013 BCMR Statement, where we explained that the transition cost adjustment was limited to that charge control and is not a policy that we proposed to extend indefinitely.[155]

We propose adjustments to BT's 2013/14 RFS

6.44 Our starting position for the base year costs is based on BT's audited RFS for 2013/14. Openreach has provided us with a detailed disaggregation of costs from the RFS. This data underlies the latest fully audited set of regulatory accounts available when we started the charge control modelling.

6.45 As set out in Section 4, we propose adjusting the cost data to ensure that they are representative of the relevant level of costs for forward looking charge control purposes.

6.46 We have scrutinised the base year data provided by BT. In Annex 7 we set out the criteria we used to identify potential adjustments to 2013/14 RFS cost data provided by BT. Having identified potential adjustments, we then set out in Annex 7 our analysis and justification for the following adjustments to the 2013/14 base year data:

- **Access cards:** We have removed Access card costs as they are not used currently to provide business connectivity services;[156]

[153] BT has published detailed cost information on EAD services at or below 1Gbit/s since 2010/11.
[154] We set out in Annex 7 the details of the mapping from legacy WES/WEES and BES services to EAD services we have adopting in our charge control model.
[155] Paragraphs 20.154 and 20.213, March 2013 BCMR Statement.
[156] BT has allocated costs of its 'Access cards' component to regulated Ethernet services. As discussed in Annex 7, this component includes the cost of Ethernet Switches and other equipment

- **June 2015 Cost Attribution Review - Errors:** We have corrected for a number of mathematical, input and allocation errors that have been identified as part of the June 2015 Cost Attribution Review;

- **June 2015 Cost Attribution Review – General Overheads:** As part of the June 2015 Cost Attribution Review we consult on a proposal to break down General Overheads into smaller cost categories and attribute them using the underlying cost drivers. For the June 2015 BCMR Consultation, we attribute these General Overheads using Previously Allocated Costs (PAC);

- **Regulatory Asset Value adjustment:** Consistent with other charge controls, we have used the RAV for BT's Access Copper and Duct assets, rather than the CCA basis used in BT's RFS;

- **Cumulo:** BT's Cumulo rates costs are the non-domestic rating costs it pays on its rateable network assets. We have adjusted the allocation of BT's Cumulo rate costs and we have also removed the effect of refunds on payments prior to 2013/14 from the 2013/14 costs;

- **Transmission equipment:** We have removed the costs of transmission that have already been recovered through connection charges prior to 2010/11;[157]

- **Restructuring costs:** We have excluded the costs relating to one-off restructuring charges;

- **QoS resource uplift:** We have included additional resource costs associated with BT improving its QoS; and

- **SLG payments:** We have reduced the level of SLG payments to its 2011 level consistent with our minimum QoS standards.

6.47 Table 6.2 below is a summary of the impact of our adjustments on the reported 2013/14 data.

which are not currently used to provide CISBO services, but are being used in the provision of services that are downstream to wholesale leased lines (specifically Harmonised Ethernet and Mobile Ethernet Access Service or MEAS).

[157] This relates to the removal of Ethernet transmission equipment deployed. Prior to 2010/11 BT recovered these costs through connection charges. BT changed its RFS treatment in 2010/11 to recover the cost of equipment through rental charges. It capitalised the cost of pre 2010/11 equipment which we excluded from our cost base in the March 2013 BCMR Statement to prevent double recovery of costs.

Table 6.2: Summary of adjustments made to Ethernet base year costs

Adjustment	Ethernet FAC Impact (£'m)
13/14 RFS Total	559.8
Access cards	(35.4)
June 2015 Cost Attribution Review - Errors	0.8
June 2015 Cost Attribution Review - General Overheads	(34.9)
RAV	(10.0)
Cumulo	14.3
Transmission Equipment	(8.4)
Restructuring Costs	(8.1)
QoS resource uplift	4.2
SLG Payments	(13.0)
13/14 Revised Total	469.3

Source: Ofcom

We propose to take improvements in BT's QoS into account in forecasting costs

6.48 As we set out in the May 2015 BCMR Consultation, we are undertaking a review of the service quality that BT delivers in the supply of regulated wholesale Ethernet services.[158]

6.49 In setting the charge control we seek to close the gap between the charges for regulated services and the (forecast) efficient costs of providing those services. The efficient costs of providing a service usually depend on the quality of that service. We would normally expect lower levels of service quality to be associated with lower costs of provision and vice versa for higher levels of service quality. However, where the firm needs to pay penalty payments to its customers for lower service quality levels than contractually agreed, as is the case with BT, the relationship between service quality and cost may be more complex.

6.50 Reflecting this interaction between service quality and costs, charge controls are imposed in the context of an assumed baseline QoS standard. This can often be on the basis of an implied assumption that the existing level of quality is maintained. For this charge control we do not consider it appropriate to assume that BT's current level of service quality will continue through the charge control period given the changes BT is seeking to make to address stakeholder concerns, and the SMP remedies that we are imposing in the May 2015 BCMR Consultation. Below we set

[158] Our work for the May 2015 BCMR Consultation is also links to a wider review of BT's QoS which is supported by the OTA2 with the cooperation of industry. The OTA2 is facilitating discussions between BT and its customers in the provision of Ethernet services. This work has identified the need for and is proposing and agreeing changes in customer management processes employed by BT. It has also identified the need for changes to the way in which CPs work with BT to arrange the delivery of new services.

out the changes we have made to our forecasts of BT's efficiently incurred costs over the control period.

BT's QoS costs include both resource costs and penalty payment costs

6.51 The terms upon which BT provides services to its business connectivity customers are set out within the contracts it holds with its customers. An SLA forms part of these contracts. The SLA sets out BT's commitments to provide the services to an agreed quality, e.g. within a specified period.

6.52 Reflecting this contractual arrangement, BT's costs associated with QoS for wholesale Ethernet services could be viewed as comprising two main elements:

- **resource costs:** in order to deliver a particular level of service quality BT needs to deploy a certain level of resources. These resources can include both capital and labour. The use of these resources for delivering business connectivity services gives rise to costs. As set out above, we would normally expect higher levels of service quality to require greater resource commitments; and

- **SLG payments:** if BT fails to deliver its services to the standard set out in the SLAs, e.g. if the service was late, its customers are entitled to penalty payments (SLG costs).

6.53 We use the term QoS costs as the sum of resources costs and SLG costs.

BT should be allowed to recover its efficiently incurred QoS costs from the charge control

6.54 We believe that BT should be able to recover an efficient level of QoS costs from the charge control.

6.55 In relation to resource costs, we would not expect BT to meet its commitments to provide wholesale Ethernet services to an agreed quality and, in particular, to an agreed provisioning and fault repair standard, unless it maintains an efficient level of expenditure, i.e. both capital expenditure and operating expenditure, involved in meeting these standards. Therefore, we expect BT to be employing as many engineers as it is efficient for it to meet its contracted provisioning and repair lead times.

6.56 In relation to SLG costs, we would not expect an efficient firm to necessarily be resourced up to a level such that they would never have to make such payments. The resource commitments required to ensure that SLAs are always met are likely to be very significant and therefore involve QoS costs that would unlikely be at an efficient level. Allowing the recovery of some SLG payments through charges is likely to be consistent with allowing BT the opportunity to recover its efficiently incurred costs.

6.57 The inclusion of QoS costs within the charge control provides BT with the incentive to improve its performance against the SLAs and reduce its costs. Therefore we believe that our proposal is consistent with giving BT appropriate incentives to invest and minimise costs.

BT's recent changes to improve its QoS

6.58 As part of our examination of BT's quality of wholesale Ethernet services, in the May 2015 BCMR Consultation we propose a number of remedies, including minimum standards against which BT will be required to deliver key provisioning and fault repair obligations.

6.59 BT's efficient investments associated with improving its performance are captured by our charge control modelling because they are generally included in the base year RFS. BT has however informed us of an additional investment which it made during the 2014/15 financial year. In that period BT has recruited additional staff and contractors to work on fibre products, i.e. NGA and Ethernet. Therefore, a proportion of the costs associated with this recruitment are relevant to the 2016 LLCC. Since this consultation uses BT's 2013/14 RFS as its base year for charge control modelling purposes, any costs associated with these new recruits are not going to be captured in the charge control unless the base year is adjusted. Given that we intend to base our 2016 BCMR Statement on BT's RFS data for 2014/15, these costs should automatically be captured in our base year data.[159]

6.60 We have gathered information from BT in relation to the additional staff it has recruited. During 2014/15 financial year, BT has recruited [✂] which resulted in [✂] additional costs for the 2014/15 financial year.[160] These are direct resource costs associated with hiring additional engineering staff to help BT meet its SLAs regarding all of its fibre services, including but not limited to business connectivity services. BT has informed us that there are no additional resource costs for the 2014/15 financial year.[161] [162]

We propose to allow BT to recover its additional resource costs associated with improving its QoS

6.61 In the May 2015 BCMR Consultation we note that, for the period from 2011 to 2014, the increase in volumes for Ethernet was not matched by a proportionate increase in the resources available to undertake Ethernet related work, i.e., the level of resources did not keep pace with demand.[163]

6.62 When setting charge controls we seek to allow BT the opportunity to recover its efficiently incurred costs, including those required to improve service quality where such an improvement is appropriate. On this basis we are proposing to allow BT to

[159] As set out above, we include an adjustment to BT's 2013/14 base year costs to reflect the additional resources it is deploying now to improve quality of service. We do not propose to make further adjustments in later years of the control period, but rather forecast how the base year costs will evolve over time consistent with our general modelling approach.
[160] BT's response of 6 February 2015 to QB1 of the 9th s135 notice dated 2 February 2015.
[161] BT's response of 6 March 2015 to QA1 of the 12th s135 notice dated 27 February 2015.
[162] On 1 May 2015 (in an email from [✂] (Openreach) to [✂] (Ofcom)) Openreach informed us that it is increasing the existing Ethernet delivery resource by [✂]. Given that we received this new information at a relatively late stage in our process for generating the charge control proposals, we have not yet been able to consider exploring with BT the costs associated with these additional FTE and the relevance of them to our charge control forecasts for this consultation. However, we will do so as part of our broader review of what adjustments are appropriate to BT's 2014/15 RFS costs for QoS.
[163] Paragraphs 13.50-13.51 and A17.173-A17.176, May 2015 BCMR Consultation.

recover a proportion relevant to Ethernet services of its additional resource costs associated with QoS improvements from the charge control.[164]

6.63 We have set out the assumptions and adjustments we have made in order to appropriately reflect these costs in the 2013/14 base year in Annex 7.

6.64 Vodafone submitted to us a paper where it discussed BT's QoS and its views of the implications of the recent service standards for the 2016 BCMR Statement.[165] In the paper Vodafone argued that BT has increased its profitability by letting the quality of its services fall and therefore "*BT has in effect drawn its profit early through cost cutting measures incorrectly labelled as efficiency savings*".[166] Vodafone further sets out that, in setting future charge controls a number of questions need to be addressed:

> *How should historical cost cutting that resulted in extra profitability but a deterioration in QoS be treated going forward? Where BT removed cost at the direct expense of quality in pursuit of short term profitability, should an adjustment be made to reflect this?*[167]

6.65 In light of these questions, Vodafone argues that it "*would be perverse if BT were to seek additional funding through the subsequent charge control to restore its ability to meet current and future demand, having already reallocated these funds to shareholders in the form of enhanced profitability".*[168]

6.66 In response to Vodafone, we disagree that it is appropriate to disallow BT to recover the costs it requires to improve service quality during the 2016 LLCC period. Excluding such costs from the cost base would result in BT under-recovering some of its efficiently incurred costs over the control period and this is inconsistent with our principle of ensuring that charge controls give BT an opportunity to recover its efficiently incurred costs.

6.67 In our view, Vodafone's argument essentially is that we should depart from our forecast of BT's efficiently incurred costs over the control period in order to correct for historical profitability. Such an approach would amount to retrospection, which we consider to be contrary to regulatory best practice given its impact on regulatory certainty.

6.68 While in hindsight it could be argued that additional constraints on BT's incentives and ability to engage in cost reductions that act to lower service quality may have been appropriate during the past control period, we consider the appropriate response is not to retrospectively seek to correct for this, but rather to ensure that appropriate remedies are in place going forward. In the May 2015 BCMR Consultation we set out SMP remedy proposals that seek to directly restrict BT's incentives, and ability to act on any such incentives, to undertake actions that result in a degradation the quality of its Ethernet service under the next control period.

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[164] We set out our assessment of these additional resources and whether they appear sufficient to meet Ethernet demands in the May 2015 BCMR Consultation.
[165] Vodafone, *Quality of Service assumptions in BCMR 2016 charge controls,* February 2015, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/qos-Vodafone.pdf (Vodafone's QoS submission).
[166] Vodafone's QoS submission, p.2.
[167] Vodafone's QoS submission, p.2.
[168] Vodafone's QoS submission, p.2.

We propose to allow BT to recover SLG payments consistent with our proposed minimum QoS standard

6.69 As we set out above, allowing BT to recover at least a proportion of its SLG payments is likely to be consistent with allowing it to recover its efficiently incurred QoS costs.

6.70 In the May 2015 BCMR Consultation, our proposed QoS minimum standards are based on the QoS performance that BT achieved in 2011, which is its best past performance for which we have reliable data. We therefore have used a level of SLG payments consistent with those incurred in 2011 to adjust BT's costs, as this represents a reasonable level of SLG payments that we might expect given our proposed minimum QoS standards. Given that BT's QoS in 2013/14 was significantly below that achieved in 2011, this adjustment involves removing a significant proportion of BT's incurred SLG payments from the base year cost data. We intend to use BT's actual SLG payments going forward on the basis that BT's additional resource costs associated with QoS improvements should mean that these are at a reasonable level. However, if they are not, we are likely to make similar adjustments to the 2014/15 costs.

6.71 We set out the assumptions behind the adjustment that we propose to make in relation to BT's SLG payments in the 2013/14 base year in Annex 7.

Overall impact of the proposed QoS adjustments

6.72 As explained above, we propose to allow BT to recover its additional resource costs associated with improving its QoS but to reduce the level of SLG payments which BT can recover to its 2011 levels consistent with our proposed minimum QoS standard. The net effect of these two adjustments is to reduce the level of QoS costs which we allow BT to recover from the charge control compared to the level of QoS costs it has incurred in 2014/15.

Stage 3: Forecast costs for the duration of the charge control

6.73 Having modelled the relevant base year costs under Stage 2, we forecast (from this starting point) how costs are likely to change over the duration of the proposed charge control. In the paragraphs below we summarise our proposals in relation to volume and efficiency changes and the impact of imposing other remedies given that they are specific to Ethernet services.

6.74 Our proposed approach in relation to AVEs and CVEs, input price inflation changes and the cost of capital for Ethernet services is discussed in Section 5 and Annex 8.

We propose to forecast significant Ethernet volume growth until 2018/19

6.75 As we are forecasting the costs and revenues of BT's Ethernet leased lines, our volume forecasts only include BT's sales and not, for example, market-wide volumes. Furthermore, BT's Ethernet leased lines consist of a significant number of different products (e.g. EAD, EAD LA, WES, BES, etc.), bandwidths and charging elements (for example rentals, connections and main links). The 2015 LLCC Model requires forecasts for each product and charging element, including those that are outside our charge control; for example, Ethernet and WDM services above 1Gbit/s and all

Ethernet services in the CLA.[169] This is because the costs for controlled services may also depend on the demand for non-controlled services due to the presence of economies of scale and scope in the provision of leased lines. Furthermore, non-controlled services are also relevant in terms of controlling the impact of our proposed dark fibre remedy.

6.76 We have followed two steps to establish our volume forecasts for Ethernet services. We start by establishing a forecast for actives-only circuits, drawing on information from different stakeholders. We then consider how this demand may be affected by the availability of the proposed dark fibre remedy. Based on these two inputs, we derive our forecasts of demand for active services in the presence of the proposed dark fibre remedy. Below we discuss each of these steps.

Actives-only forecast

6.77 We have gathered volume forecasts, in the absence of passive remedies, for Ethernet and Optical services for the charge control period from BT as well as OCPs and two industry analysts. Some of the trends are fairly consistent, for example for 100Mbit/s services, but we have found some differences between BT's forecasts and those of other CPs and/or industry analysts. In particular, [✂].

6.78 In terms of 10Mbit/s services, we consider that volumes will continue to rapidly decline due to Openreach's current pricing of EAD and EAD LA 10Mbit/s circuits, which are charged at a higher rate than their equivalent 100Mbit/s services. We therefore expect customers of 10Mbit/s services to continue upgrading to 100Mbit/s circuits, as they did in 2013/14. Furthermore, as set out in the May 2015 BCMR consultation, Ethernet in the First Mile (EFM) services are emerging as an alternative for users that do not necessarily need very fast upload and download speeds, while NGA may be an alternative for users who also do not need other features of leased lines.[170]

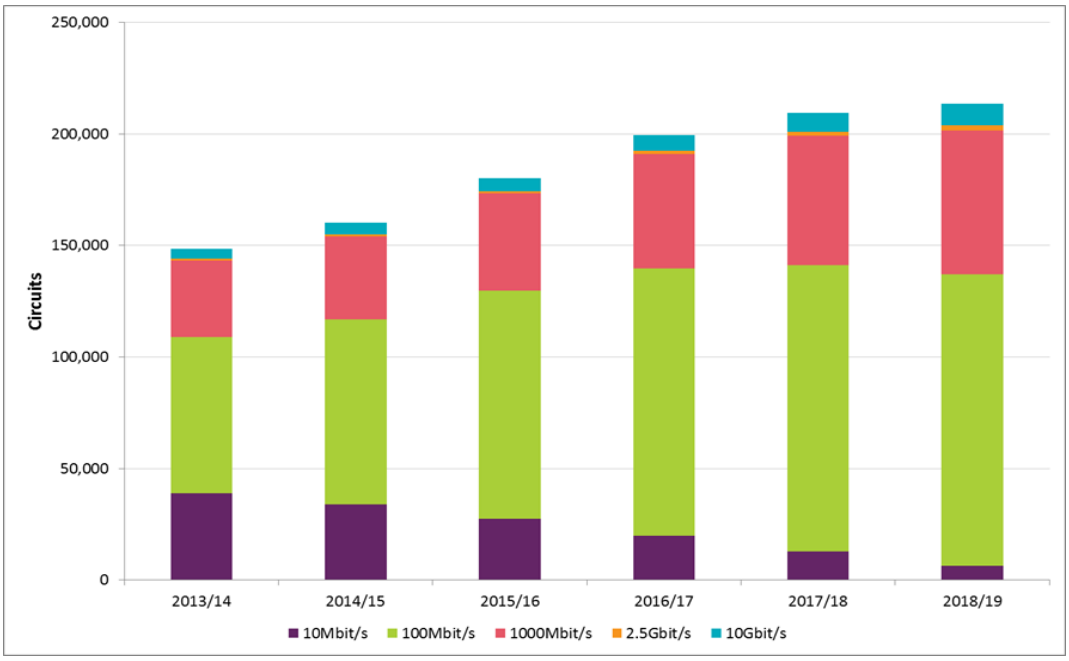
6.79 We have therefore considered all forecasts, along with other evidence collected for the May 2015 BCMR Consultation, and on balance consider that it is reasonable to primarily use BT's forecasts. In particular, we predict continued growth in demand for Ethernet services of 100Mbit/s and above, which is likely to be driven by the following factors:

- increasing demand for bandwidth-intensive activities and applications;
- the need to transmit increasingly large amounts of data quickly;
- the deployment of NGA and new services delivered over 4G mobile networks which will further increase the requirement for backhaul capacity; and
- the lower unit cost of Ethernet by bandwidth is likely to drive further significant growth in the demand for Ethernet services.

6.80 Our forecast of Ethernet circuit volumes, as summarised in Figure 6.1 below, shows that there has been significant growth over the period from 2007/08 to 2013/14, and that this trend is expected to continue to 2018/19.

[169] We explain how we have dealt with volumes in the CLA in Annex 6.
[170] Paragraph 3.48, May 2015 BCMR Consultation.

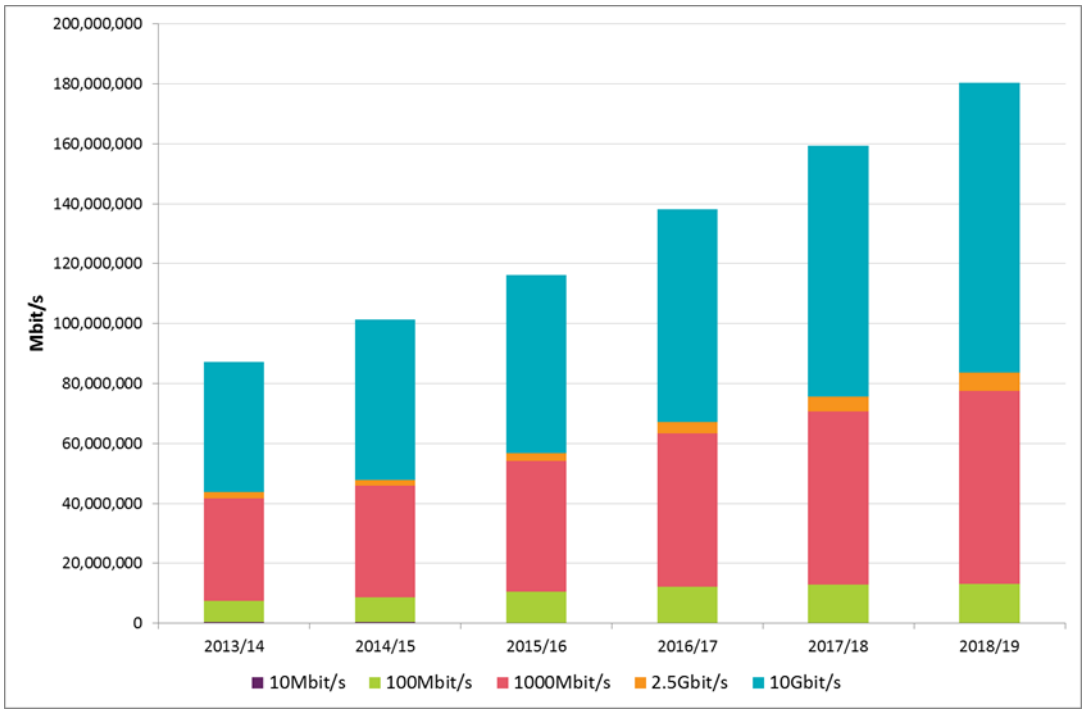
Figure 6.1 Ethernet Circuit Volumes (installed base)



Source: Ofcom forecasts

6.81 We have also used our forecasts of circuit volumes to derive a forecast of the capacity delivered using Ethernet services. Figure 6.2 shows the trend over the period 2007/08 and 2013/14 has exhibited significant growth, and this is forecast to continue after 2013/14, particularly due to the growth of higher bandwidth services.

Figure 6.2 Ethernet Capacity



Source: Ofcom forecasts

Cannibalisation by the proposed dark fibre remedy

6.82 We expect the proposed dark fibre to cannibalise some active circuits forecast in the next review period. To estimate the cannibalisation of active circuits by the proposed dark fibre remedy, we have made some principle-based assumptions about the potential use of dark fibre, informed where possible by qualitative information from BT, OCPs and our proposed dark fibre remedy design. This includes the following assumptions (we set out in more detail the basis for our proposed cannibalisation assumptions in Annex 8):

- one-for one substitution between active circuits and the proposed dark fibre,[171] and the total number of circuits will not change;
- both internal and external sales will be affected;
- demand for the proposed dark fibre is likely to start slow and rapidly increase, as CPs will likely need to test/trial the remedy first; and
- CPs will only use the proposed dark fibre for new connections in this review period, i.e. there will be no cannibalisation of existing rentals.

6.83 On the basis of these assumptions, we propose the following cannibalisation rates:

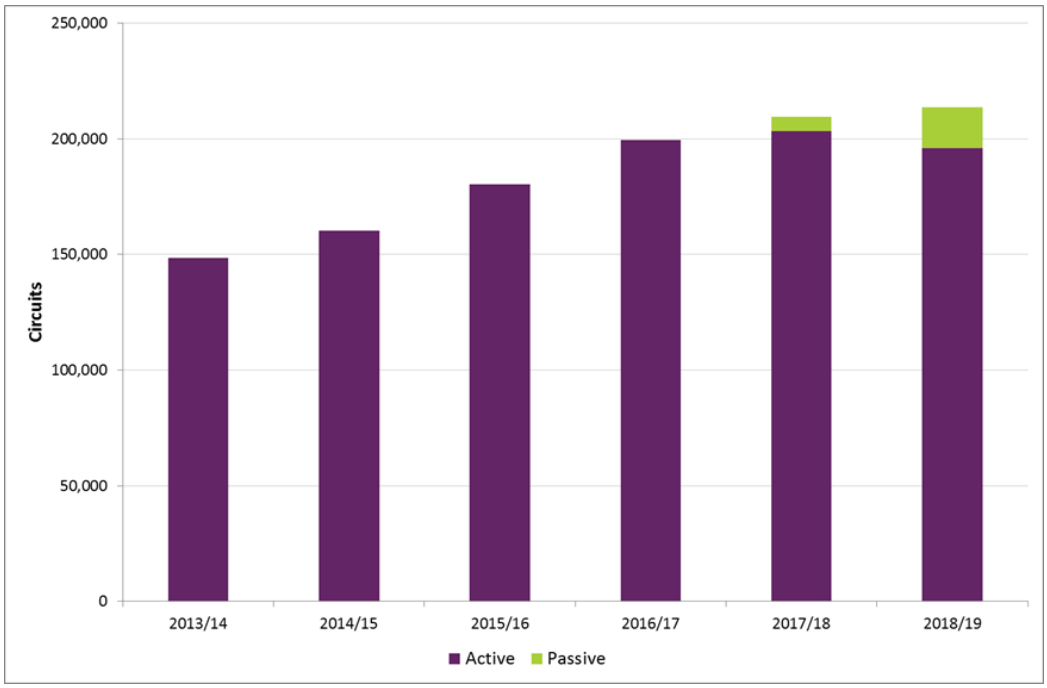
- 50% cannibalisation of new connections (and associated rentals) for EAD, EAD LA and OSA circuits at 1Gbit/s and above in the second year of the control (the first year that the proposed dark fibre remedy will be commercially available); and
- 100% cannibalisation of new connections (and associated rentals) for EAD, EAD LA, and OSA circuits at 1Gbit/s and above in the final year of the control (in other words, we assume no new connections for these circuits).

6.84 We will take stakeholder views on these proposed rates, and the underlying assumptions, into account where appropriate following this consultation.

6.85 Our forecast of Ethernet circuit volumes in the presence of the proposed dark fibre remedy is summarised in Figure 6.3 below.

[171] I.e. a CP would replace one active connection with one dark fibre circuit (it would not aggregate multiple active circuits on one dark fibre circuit).

Figure 6.3 Ethernet and Passive Circuit Volume Forecasts



Source: Ofcom forecasts

We propose an efficiency assumption of 4% to 7% for Ethernet services

6.86 In calculating the appropriate value of X for the charge control, we take into account an assumed efficiency gain that we expect BT to be able to achieve over the period of our proposed charge control.

6.87 Assessing efficiency requires a degree of regulatory judgement. Our analysis is heavily dependent on the available evidence. For this charge control we have analysed several different sources of data, each of which have their own advantages and disadvantages. We have used the same evidence when assessing efficiency improvements for both Ethernet and TI services, though we have assessed the impact for each set of services separately.

6.88 Our proposal is to adopt an efficiency assumption of between 4-7% with a central estimate of 5% for both Ethernet and TI services. Within the 2015 LLCC Model we apply this rate to both operating costs and capital expenditure.

6.89 We set out our assessment of efficiency in Annex 8.

We propose to reflect the impact of the proposed dark fibre remedy

6.90 As set out previously, when regulating BT's wholesale services our general approach is to seek to provide BT with an opportunity to recover its efficiently incurred costs. We are therefore mindful of this when introducing any remedies, as well as when setting any pricing obligations for regulated services. In order to ensure that BT continues to have the opportunity to recover efficiently incurred costs of supplying regulated, but not necessarily charge controlled, Ethernet services, we have taken into account two items in our cost forecasts:

- cannibalisation of active circuits by the proposed dark fibre remedy; and

- implementation and development costs of the proposed dark fibre remedy.

6.91 We consider that both of these justify an uplift to the forecast costs in the Ethernet basket, as otherwise there is a risk that the proposed dark fibre remedy will undermine BT's opportunity to recover its efficiently incurred costs. Below we set out the rationale for both of these adjustments, and summarise how we have taken them into account in the 2015 LLCC Model.

We propose to uplift the cost forecast in the Ethernet basket to reflect cannibalisation of active circuits by the proposed dark fibre remedy

6.92 When we set charge controls, we seek to set revenues so they equal forecast costs, in this case FAC, for the whole basket by the end of the charge control period.[172] Therefore when considering the potential impact of cannibalisation of active circuits by the proposed dark fibre remedy on cost recovery, we consider it appropriate to assess it with reference to forecast costs overall, and in particular, circuit contributions to cost recovery.[173]

6.93 As discussed above, BT may see a reduction in the volumes of its active products, both charge controlled and non-charge controlled services, as a result of the proposed dark fibre remedy being available. BT will therefore lose the cost contribution made by these circuits. While some of these costs will be avoidable, i.e. no longer incurred as a result of the proposed dark fibre remedy being supplied instead of an active circuit, the remaining costs will, broadly speaking, still be incurred irrespective of whether an active circuit or the proposed dark fibre remedy is provided, and so will need to be recovered.[174]

6.94 In many cases, this loss in contribution to non-avoidable costs from cannibalised active circuits will be offset by sales of the proposed dark fibre remedy.[175] Indeed, if the proposed dark fibre remedy circuit makes the same absolute contribution to these non-avoidable costs as the active circuit it replaces, then BT will continue to have the opportunity to recover its efficiently incurred costs and no adjustment will be required. This is because given we expect one-for-one substitution between active circuits and the proposed dark fibre remedy in this review period, the proposed dark fibre remedy would make the same contribution as the active circuit it had cannibalised.

6.95 However, if the proposed dark fibre circuit makes a lower contribution, and no allowance is made in the charge control, then BT could be denied the opportunity to recover its costs overall. Therefore we have considered the scale of costs which may be affected as a result of the proposed dark fibre remedy, and also whether there is scope for BT to recover such non-marginal costs associated with cannibalised active circuits without an adjustment.[176]

[172] In other words, there is an overall FAC-based constraint, with BT free (subject to any sub-caps) to set prices within this overall constraint.
[173] This is because if the total FAC constraint is achieved, BT should have an opportunity to recover its efficiently incurred costs (and still be able to flex its prices across services to adjust how it recovers them).
[174] For simplicity, we abstract here from whether such costs may partially vary with active volumes.
[175] Given our pricing approach, the dark fibre contribution would be equivalent to the non-avoidable costs of 1Gbit/s EAD or EAD LA circuits.
[176] We set out a fuller description of the costs we consider should be included in Annex 6, where we also explain the calculation we propose to adopt.

6.96 In the November 2014 BCMR Passives Consultation,[177] we set out some illustrative examples of the potential scale of cost recovery that may be affected were passive remedies to be introduced, assuming different volumes of active circuits being lost.[178] These estimates were based on the fixed and common cost contribution made for all leased lines.[179] However, as we recognised in the consultation, there were significant limitations to this analysis. In particular, that analysis did not reflect any specific passive remedy proposals, and so did not include any estimates of the offsetting cost contribution to be made by passive remedies. It also considered quite broad, longer term, potential cannibalisation scenarios in terms of the volumes of circuits affected.

6.97 In light of our remedy design, we have been able to refine and improve on these cannibalisation scenarios, and also to take account of the contribution to costs which will be made by sales of the proposed dark fibre product during this review period. Therefore our calculation of the cost recovery potentially affected by the introduction of the proposed dark fibre remedy is significantly lower here than the illustrative examples presented in the November 2014 BCMR Passives Consultation.

6.98 In line with the above, we consider the costs potentially affected by the introduction of the proposed dark fibre remedy to be equivalent to the differences in the non-avoidable costs of cannibalised active circuits compared to the proposed dark fibre remedy. Given our proposed pricing approach for the proposed dark fibre remedy (as discussed in Section 8), we would expect the proposed dark fibre to make the same contribution to non-avoidable costs as cannibalised EAD 1Gbit/s and EAD LA 1Gbit/s active circuits. Therefore there would not appear to be a cost recovery concern for these cannibalised circuits; indeed, we would assume that BT would be indifferent between providing an active circuit or dark fibre for these circuits. However, there are variations in contributions to these costs between circuit types where we expect some cannibalisation by the proposed dark fibre, which may raise a concern. This includes circuits outside of the charge control.

6.99 In Table 6.3 below, we provide a summary of the circuit types other than EAD 1Gbit/s and EAD LA 1Gbit/s active circuits that we anticipate will be cannibalised by the proposed dark fibre in this review period (the full rationale for these proposals is discussed in Annex 8), and how their per circuit contribution to non-avoidable costs compares to that of the proposed dark fibre, i.e. external 1Gbit/s EAD and EAD LA circuits.[180] Given we are assuming cannibalisation of new connections (and associated rentals) only; we have compared the contribution from connection plus one year's rental for the active circuit and the proposed dark fibre in 2018/19 to illustrate the issue.

[177] Ofcom, *Business Connectivity Market Review, Preliminary consultation on passive remedies*, 5 November 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-passives/summary/BCMR_passives.pdf (November 2014 BCMR Passives Consultation).
[178] Paragraphs 5.10-5.28, November 2014 BCMR Passives Consultation.
[179] This was calculated by multiplying the difference between FAC and DLRIC by the published circuit volumes.
[180] We explain the basis for the active and dark fibre contributions to non-avoidable costs in Annex 6, as well as why, for the purposes of this consultation, we base the dark fibre contribution on external (rather than internal) costs.

Table 6.3: Comparison of 2018/19 per circuit non-avoidable cost contributions of the proposed dark fibre and cannibalised active circuits in one year

Service technology	Customer type	Active contribution to non-avoidable costs	Dark fibre contribution to non-avoidable costs	Active contribution relative to dark fibre
OSA 10Gbit/s	Internal	[✂]	[✂]	**Active makes greater contribution**
	External	[✂]	[✂]	**Active makes greater contribution**
EAD 10Gbit/s*	Internal	[✂]	[✂]	**Active makes greater contribution**
	External	[✂]	[✂]	**Active makes greater contribution**

Source: Ofcom

**[✂]*

6.100 This shows that active OSA 10Gbit/s and EAD 10Gbit/s circuits are forecast to have a higher FAC in 2018/19, when active-specific incremental costs are excluded, than assumed by the proposed dark fibre remedy. Therefore we are concerned that BT's opportunity to recover its efficiently incurred costs could be undermined as a result of the cannibalisation of these active circuits by the proposed dark fibre remedy. Although these active circuits which we anticipate to be cannibalised and which make a higher contribution to cost recovery than the proposed dark fibre are not included in our charge control basket, we consider that if we did not take the reduction in non-avoidable cost contributions from the cannibalisation of these circuits into account then these costs could go unrecovered.[181]

6.101 We consider that BT's ability to recover these costs elsewhere is likely to be limited. In particular, services within the charge control will be subject to a FAC-based constraint based on active volumes with dark fibre available. This means that there would not be scope to recover the difference in contributions from services within the charge control. Further, given the proposed dark fibre pricing approach, BT would not be able to recover these costs from the dark fibre price given the overall constraint on the Ethernet basket, which also limits the scope for their recovery from the cannibalised circuits themselves. Similarly, we consider there is a risk that BT would not be able to recover them from active circuits above 1Gbit/s outside of the control, as it would be undercut by competitors offering services using dark fibre. Therefore we consider that there is a risk that these costs could go unrecovered, and so the proposed dark fibre could undermine BT's opportunity to recover its efficiently incurred costs.

6.102 To address this, we propose to add the non-avoidable cost differentials between the proposed dark fibre and cannibalised active circuits into the Ethernet basket cost forecast.[182] This would provide BT with an opportunity to recover these costs from

[181] To the extent that the availability of dark fibre undermines BT's ability to recover the fully allocated cost of non-cannibalised active services in this control period, we may need to consider if an additional adjustment is necessary and appropriate.
[182] I.e. we multiply the difference in non-avoidable costs by the volume of cannibalised active circuits.

the Ethernet basket, and have the benefit of providing BT with some flexibility over how it then sets charges to recover them, including how they are recovered across dark fibre as well as active circuits.

6.103 Based on the cannibalisation volumes we have assumed in each year of the control, these differences in non-avoidable cost contributions equate to approximately £4.6 million of cost recovery potentially at risk in the final year of the charge control as a result of cannibalisation of active circuits by the proposed dark fibre remedy (we set out in detail how we have calculated this in Annex 6). We therefore propose to include an additional £4.6 million in the Ethernet basket FAC in the final year of the control.

We propose to include implementation and development costs for the proposed dark fibre remedy in the Ethernet basket

6.104 BT will incur additional costs as a result of implementing a dark fibre remedy, over and above those currently incurred in providing active services only, which relate to the development of the dark fibre product. These additional costs can be grouped under the following broad headings: systems development costs: training and operational costs: and additional management overhead.[183]

6.105 We believe that BT should be able to recover its efficiently incurred dark fibre development costs. However, there is a question around where these costs should be recovered from, and in particular, whether it should be from the dark fibre product only or more broadly. Given our proposal to use an active minus approach to pricing dark fibre, we have considered two options for recovery of BT's dark fibre development costs:

- recovery from dark fibre circuits only; and
- recovery as part of the Ethernet charge control basket, which would allow recovery from both active and passive circuits.

6.106 In order to determine which option for recovery of BT's dark fibre development costs is more appropriate we have reviewed the application of the six principles of cost recovery.[184] This has been considered within the context of our overall dark fibre pricing proposals.

Cost causation - costs should be recovered from those whose actions cause the costs to be incurred at the margin

6.107 The cost causation principle is that costs should be recovered from those whose actions cause the costs to be incurred at the margin. Although the development costs are incurred for the supply of dark fibre generally, they are not marginal to any individual connection. In addition, we consider that BT will incur these costs due to the activities of providers wishing to have wholesale access to its dark fibre. This may suggest that the costs should be recovered from dark fibre users. Most CPs that have engaged in the process of the current business connectivity market review have expressed their interest in using dark fibre. Moreover, we expect most CPs to start

[183] Based on BT's response of 13 February 2015 to Section D of the 10th s135 notice dated 5 February 2015.
[184] These principles were endorsed by the Monopolies and Mergers Commission (MMC), *Telephone Number Portability: A report on a reference under s13 of the Telecommunications Act 1984* (MMC, 1995).

using dark fibre once the product is developed. Therefore, we consider that this group of providers represents a significant majority of the users of BT's active leased lines services.

6.108 In these circumstances, we are of the view that the cost causation principle does not provide decisive guidance on the allocation of development costs related to dark fibre. The costs are not marginal to individual connections and the group of dark fibre users is anticipated to be largely the same as the group of active circuit users. This suggests that the other principles should be carefully considered before reaching a conclusion.

Distribution of benefits - costs should be recovered from the beneficiaries, especially where there are externalities

6.109 Wholesale access to BT's fibre is expected to foster competition in the provision of downstream active leased line services, increasing the choice of services available to consumers, as well as, generating pressure on the level of prices and on the quality of these services. Hence, we believe that all leased line customers can be expected to benefit from this increased competition, not just those served by CPs using BT's dark fibre.[185] This principle therefore suggests that all customers who use leased lines should contribute towards the costs incurred by BT to make dark fibre available. The alternative of recovering all of the dark fibre development costs from only dark fibre customers would mean that a group of customers would benefit from the increased competition but would not contribute towards these costs.

Effective competition - the mechanism for cost recovery should not undermine or weaken the pressures for effective competition

6.110 This principle suggests that dark fibre development costs should be recovered in a way which is competitively neutral. We consider this to mean that there should be a level playing field for all providers of active services, irrespective of the means they use to provide them.

6.111 As noted above, these development costs do not relate to the active layer; they do not form part of the 'minus' element in our 'active minus' approach to pricing dark fibre. If the dark fibre development costs were to be recovered from dark fibre only, then once the dark fibre price had been calculated on an active minus basis it would then need to be adjusted upwards to allow for these costs. This could create a distortion in the purchase decision between active and passive services, and so could undermine take-up, e.g. 1Gbit/s services may no longer be viable with dark fibre. In addition, uncertainty over take-up of dark fibre, and therefore the volumes over which development costs could be spread across, may pose a risk of under- or over-recovery of these costs and a degree of price instability, which could also undermine take-up. We consider that this would have the effect of undermining competition resulting from dark fibre, and so supports the recovery of these costs from all circuits.

6.112 In addition, there are some providers who seek to provide passive access services only, rather than active services. We consider that both options for cost recovery are consistent with effective competition for dark fibre access. We propose to price dark fibre on an active minus basis, which results in a higher dark fibre price than if it were provided on a cost-plus basis. This ensures that other providers of dark fibre services

[185] See Annex 23, May 2015 BCMR Consultation for our detailed analysis of the benefits of passive remedies.

can recover their costs, as long as they are at least as efficient as BT. Including development costs in the basket increases the price of active services, and so results in a higher dark fibre price.

Cost minimisation - the mechanism for cost recovery should ensure that there are strong incentives to minimise costs

6.113 One way to provide BT with incentives to minimise dark fibre development costs would be for it to bear all or some of these costs on its own services. If BT did not contribute to these costs, it would have little incentive to minimise these costs, particularly as increasing such costs would affect the viability of the business case of its competitors and reduce the probability of increased competition in associated downstream markets. On the other hand, there should also be an incentive on dark fibre operators to avoid inefficiently expensive solutions, as they have some ability to influence the technical specification to be implemented. Such incentive would be absent if BT were to bear all the costs. Therefore, we consider that the principle of cost minimisation points towards the recovery of these costs being shared between BT and the dark fibre operators and hence recovery across all active and passive circuits.

Practicability - the mechanism for cost recovery needs to be practicable and relatively easy to implement

6.114 The pattern of migration and long term level of demand for passive circuits is difficult to forecast, and so recovery of development costs from dark fibre only may raise practicality concerns and could result in uncertainty and volatility in pricing. However, we consider that including the development costs in the Ethernet charge control should allow a smoother and more predictable opportunity for their recovery, which, given the nature of the pricing approach for dark fibre, would in effect result in these costs being recovered across both active circuits and dark fibre. This is because, as noted above, the dark fibre development costs do not form part of the LRIC associated with the imposed dark fibre product, i.e. they do not form part of the 'minus' element. Therefore, if the dark fibre development costs are included in the broad Ethernet basket, BT will be able to recover these costs from both its active and passive products which is likely to be more practical and also allow BT some flexibility in their recovery.

6.115 As a result, we consider that this principle suggests that dark fibre development costs should be recovered across all active and passive circuits.

Reciprocity - where services are provided reciprocally, charges should also be reciprocal

6.116 The reciprocity principle does not provide any useful indication in this case, because dark fibre services are not provided reciprocally.

Our proposal

6.117 Based on the above, we therefore propose to include the dark fibre development costs in the Ethernet basket, so in effect they are recovered across all (active and dark fibre) circuits. This ensures that competition between dark fibre and active services is not distorted, allowing the development of competition based on dark fibre

access. This is consistent with the approach we have used in previous charge controls (e.g. LLU system set-up costs and LLU line testing costs).[186]

6.118 In order to estimate the efficient level of costs that BT would incur in relation to the development of dark fibre, we looked at the most recent Statement of Requirement (SoR) submitted to BT which requested the development of a similar product.[187] In response to this SOR,[188] BT estimated the development costs of providing this product and we have used this estimate to determine a reasonable level of development costs for dark fibre, which we propose to be approximately [✂] [£5m to £10m] per year of the charge control.

6.119 We set out the basis for this provisional proposal in Annex 6.

Stage 4: Consider whether to make starting charge adjustments

6.120 In Section 4, we set out the principles under which we would consider making starting charge adjustments. In particular, we proposed to apply the following principles in relation to starting charge adjustments:

- Distorted pricing signals - we propose to compare BT's aggregate service charges to their costs using 2016/17 forecast data. If charges are significantly above DSAC (or possibly FAC) or below DLRIC, we propose to consider a starting charge adjustment; and
- Excessively high or low margins driven by:
    - efficiency and volume changes – we propose to impose a glide path;
    - changes in cost allocations (and accounting errors) between regulated markets – we propose to impose a glide path;
    - changes in cost allocations (and accounting errors) between regulated and unregulated markets – we propose to impose a starting charge adjustment; and
    - changes in modelling approach – we propose to impose a glide path.

[186] In the November 2005 LLU Statement, we decided that LLU line testing costs should be pooled with public switched telephone network (PSTN) line test costs and spread across all lines (see paragraph 4.62 in Ofcom, *Local loop unbundling: setting the fully unbundled rental charge ceiling and minor amendment to SMP conditions FA6 and FB6 - Statement*, 30 November 2005, http://stakeholders.ofcom.org.uk/binaries/consultations/llu/statement/llu_statement.pdf (November 2005 LLU Statement). Also in the December 2004 WLA Statement, we decided that if possible, LLU system set-up costs should be pooled together with equivalent BT Digital Subscriber Line (DSL) system set-up costs and spread across all local loops used to provide DSL services (see paragraph 8.25 in Ofcom, *Review of the wholesale local access market. Identification and analysis of markets, determination of market power and setting of SMP conditions - Explanatory statement and notification*, 16 December 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/rwlam/statement/rwlam161204.pdf (December 2004 WLA Statement).

[187] We looked at SoR 8434 submitted by Vodafone on 18 November 2014 which requested that BT provides general dark fibre connectivity.

[188] BT has informed us that this data has a lower level of accuracy as it was derived from its Rapid Impact Assessment and it was based on BT's understanding of the proposed dark fibre remedy that preceded the May 2015 BCMR Consultation. Nevertheless, after reviewing BT's data we consider it to be a reasonable basis to estimate the dark fibre development costs for the 2015 LLCC Model.

6.121 We now discuss the application of these principles in relation to the Ethernet basket.

Distorted Pricing Signals

6.122 We have compared BT's charges for each Ethernet service in aggregate[189] and compared these to our forecasts of DSAC, DLRIC and FAC in the first year of the next control (2016/17).[190] Our analysis shows that no Ethernet services in our basket will be priced above DSAC or double FAC in 2016/17 when considered in aggregate.[191]

6.123 However, our analysis of aggregate services shows that EAD LA 10Mbit/s is currently forecast to be priced below DLRIC in 2016/17. This is driven by the fact that forecast volumes are expected to decline significantly as a result of customers either switching to other services, such as EFM and NGA, or upgrading to 100Mbit/s services, which are currently cheaper than 10Mbit/s (see Annex 8 for a more detailed discussion). For example, we forecast new connections to fall to less than [✂] in 2016/17 from around 3,000 in 2013/14. As a result, the unit cost of the service increases significantly, which results in a relatively high DLRIC. If we only consider the rental charge for EAD LA 10Mbit/s then this is forecast to be priced above DLRIC. We therefore do not believe it would be proportionate to make a starting charge adjustment for this service.

Cost attribution

6.124 As set out in Section 4, we consider it is appropriate to make a starting charge adjustment where we find that costs which are incremental to unregulated services have been allocated to regulated business connectivity services (and vice versa). This may be due to an inappropriate attribution methodology or it may be due to an accounting error.

6.125 We have identified three broad areas where we consider this to have affected services in the Ethernet basket.[192] Below we apply the framework set out in Section 4 and present the starting charge adjustments that we consider are appropriate. Further details of the adjustments are provided in Annex 7.

Access cards

6.126 BT has allocated costs of its 'Access cards' component to regulated Ethernet services. As discussed in Annex 7, this component includes the cost of Ethernet Switches and other equipment which are not currently used to provide CISBO services, but are instead used in the provision of services that are downstream of wholesale leased lines, specifically Harmonised Ethernet and Mobile Ethernet

[189] For example, in the case of an EAD circuit we consider the total cost of purchasing the service over three years, including the connection, rental and main link charges.
[190] A more detailed explanation of how our analysis is provided in Annex 6.
[191] There are some individual connection charges that are forecast to be above DSAC and double FAC, namely EAD/EAD LA 100Mbit/s and 1Gbit/s and EBD 1Gbit/s connection charges. However, as discussed in Section 4, we do not consider individual services when deciding whether or not to make a starting charge adjustment.
[192] These three areas exclude the accounting errors that the June 2015 Cost Attribution Review found resulted in Ethernet costs being reattributed to unregulated services (and vice versa). Although this is included in our starting charge adjustment, the impact is not material (it adds [✂] million of costs in the base year).

Access Service (or MEAS).[193] They are therefore not incremental to any services in the Ethernet basket. Including an attribution of these costs to Ethernet service, results in charges that are too high and which, therefore, distort competition and investment. Moreover, if such costs have been included in the current charge control it would result in charges that are above cost for reasons unrelated to efficiency.

6.127 We have removed all Access card costs from our base data, and therefore our cost forecasts. In the March 2013 BCMR Statement, we made a partial adjustment to remove some Access card costs but not all of them; in particular we did not remove the 'unavoidable' costs associated with the component.[194] For our current base year data, the total impact of removing all Access card costs from the base year is around £35 million; the 'unavoidable' costs account for about £19 million of these. We propose to include only the latter in our starting charge adjustment. We do not believe it would be appropriate to make a starting charge adjustment for the Access card costs removed from our cost estimates in the 2013 LLCC. That is, we do not take into account £16 million when calculating the starting charge adjustment,[195] as those costs are not reflected in current charges for Ethernet services.

Changes in cost attribution by BT

6.128 As explained in Annex 5, one of the reasons why BT's returns on wholesale Ethernet services in 2013/14 were significantly above its cost of capital was due to changes in the apportionment and attribution of various costs. The majority of these relate to changes in BT's cost accounting methodology in 2012/13, where a number of costs were reattributed to fixed access markets.[196] Given that we currently regulate and charge control fixed access markets, we do not propose to consider this in our starting charge adjustment proposals due to the risk to regulatory stability and the risk that BT will not have the opportunity to recover its efficiently-incurred costs for regulated services.

6.129 However, BT also made changes in its cost attribution methodology in 2013/14, which reflected improvements to the attribution and valuation methodologies set out in BT's Accounting Documents. The changes that were implemented in 2013/14 resulted in the transfer of over £25 million of costs from CISBO markets to unregulated wholesale markets.[197] Given that BT has identified more appropriate cost drivers in this case, i.e. they are more consistent with the principles of objectivity and causality, we believe that these costs are incremental to unregulated services and so should not previously have been attributed to Ethernet services.[198] We therefore propose to include these in our starting charge adjustment. If we did not do

[193] BT's response dated 27 February 2015 to section B of the 10th s135 notice dated 5 February 2015.
[194] March 2013 BCMR Statement, Annex 12, Figure A12.5.
[195] Though this cost is still excluded in our base data adjustment and therefore from our cost forecast.
[196] BT, *Report requested by Ofcom describing certain changes to the Accounting Documents for the year ended 31 March 2013 and illustrating the resulting differences to the Current Cost Financial Statements had those changes not applied,* 3 October 2013, http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2013/ReportrequestedbyOfcomfortheyearended31March2013.pdf (2013/14 BT Report requested by Ofcom), and paragraphs 5.11-512 and Annex 22, June 2014 FAMR Statement.
[197] BT, *Report requested by Ofcom describing certain changes to the Accounting Documents for the year ended 31 March 2014 and illustrating the resulting differences to the Current Cost Financial Statements had those changes not applied*, 2 October 2014, http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2014/ReportrequestedbyOfcomfortheyearended31March2014.pdf (2014/15 BT Report requested by Ofcom).
[198] As discussed in Section 4, this is distinct from costs that would be regarded as 'common', for which there is no singularly correct way to apportion.

this, it could result in a continuing distortion in the regulated market unregulated as BT would continue to recover costs that are incremental to the unregulated service from regulated charges.

Changes in cost attribution proposed in the June 2015 Cost Attribution Review

6.130 As set out in the June 2015 Cost Attribution Review, we consider that the way BT attributes a significant amount of General Overheads, specially corporate costs and TSO support function costs, to regulated and unregulated services is inappropriate because it does not follow the principles of Causality and Objectivity (as defined in Section 4).[199] In particular, BT attributes a significant proportion of corporate costs and TSO support function costs using a methodology based on pay and return on assets. We consider that this approach does not provide an objective or causal basis for cost allocation.

6.131 In the June 2015 Cost Attribution Review, we have undertaken an analysis of these costs and proposed alternative attribution methodologies. In Tables 6.4 and 6.5 below we summarise our proposed attribution rules for the costs included within BT's corporate costs and TSO support function costs. For some costs, for example Employee Healthcare, we have identified a specific cost driver that we consider is consistent with the Causality and Objectivity principles, e.g. number of employees.

6.132 For other costs, we have not been able to identify a clear cost driver and have proposed to allocate these costs proportionately based on previously allocated total costs.[200] We consider these costs, for example Group Finance, to be linked to all BT activities.

6.133 As explained in the June 2015 Cost Attribution Review, we estimate that changing the cost drivers for corporate costs and TSO support function costs could result in a net reallocation of £226 million from regulated markets to unregulated markets (of which we estimate a net £55 million is reallocated from regulated Business Connectivity markets).[201] This means that certain costs that are incremental to unregulated services were previously being allocated to regulated Ethernet leased lines.

6.134 As discussed in Section 4, where the adoption of cost drivers has resulted in costs that are incremental to unregulated services being attributed to CISBO services, we propose to include them in our starting charge adjustment in order to ensure that any competitive distortion is removed as quickly as possible.

6.135 Based on the assessment of corporate costs and TSO support function costs carried out in the June 2015 Cost Attribution Review, we have used the proposed allocation rules in order to determine whether or not to impose a starting charge adjustment in this charge control. Specifically, where the June 2015 Cost Attribution Review has

[199] June 2015 Cost Attribution Review.

[200] As explained in the June 2015 Cost Attribution Review, BT's cost attribution system allocates costs to the different levels of their cost exhaustion system. When we propose that costs should be allocated based on all previously allocated total costs we mean that each division, market, service, and component (i.e. the different levels of the cost exhaustion system) should be allocated these costs based on the previously allocated total costs at that level of the cost exhaustion system divided by the total of all previously allocated total costs within BT as shown in the following formula $\boldsymbol{x = \text{OUC costs} * [\frac{\text{Previously allocated total costs at level x}}{\text{Total previously allocated total costs within BT}}]}$, where x = allocation of the OUC's costs at a specific level of BT's cost exhaustion system.

[201] June 2015 Cost Attribution Review.

identified a specific cost driver, we propose to include this in our starting charge adjustment. Given that our economic test applies to incremental cost, we consider that where a cost category has been given a single driver, it is likely that BT's current attribution methodology allocates costs that are incremental to unregulated services to regulated Ethernet services.

6.136 Adjusting only for the costs where we have identified a specific cost driver, i.e. not previously allocated total costs, results in the removal of around £22 million in base year costs for Ethernet.[202]

Table 6.4: Analysis of corporate costs

BT's OUC description	New Allocation Rule	Included in Starting Charge Adjustment?
Employee Liability insurance	Number of employees	Yes
Employment Practice Liability	Number of employees	Yes
Employee healthcare	Number of employees	Yes
Employee broadband offer	Number of employees	Yes
Employee death in service benefit insurance	Previously allocated pay costs	Yes
Business interruption insurance	Previously allocated property costs	Yes
Motor vehicle insurance	Previously allocated fleet costs	Yes
BT TSO Research & Innovation	Number of employees	Yes
BT TSO Architecture and Global IT Platforms	Previously allocated IT costs	Yes
Group Finance	Previously allocated total costs	No
BT TSO Chief Information Office for Group	Previously allocated total costs	No
Group Human Resources	Number of employees	Yes
Corporate Communications	Previously allocated total costs	No
Group Legal	Previously allocated total costs	No
Reporting planning analysis	Previously allocated total costs	No
Corporate Special Projects	Previously allocated total costs	No
Learning Academy - HR	Employee pay costs	Yes
Strategy, Policy and Portfolio	Relevant revenue	Yes
BT TSO Chief Information Office for BT Wholesale	Previously allocated total costs	No
BT TSO Chief Information Office for Retail	Previously allocated total costs	No
Other Costs	Previously allocated total costs	No

Source: June 2015 Cost Attribution Review

[202] As set out in Annex 7, for the purpose of the June 2015 LLCC Consultation we have estimated the impact of the proposed changes by allocating all General Overheads on the basis of PAC. For the 2016 BCMR Statement the adjustments will be calculated using the relevant cost driver.

Table 6.5: Analysis of TSO Support Function costs

BT's OUC description	New Allocation Rule	Included in Starting Charge Adjustment?
Redundancy payments	Employee pay costs	Yes
IT Services Subcontractor Offshore SGA	Previously allocated IT costs	Yes
BT TSO Human Resources & Communications	Previously allocated total costs	No
BT TSO Service, Strategy and Operations	Previously allocated total costs	No
BT TSO Finance	Previously allocated total costs	No
BT TSO Chief Information Office for Global Services	Previously allocated total costs	No
BT TSO General Infrastructure Services	Employee pay costs	Yes
BT Fleet	Previously allocated fleet costs	Yes
BT TSO Global Network Services Management and Support	Previously allocated IT costs	Yes
Other Costs	Previously allocated total costs	No

Source: June 2015 Cost Attribution Review

We propose a starting charge adjustment of -9% for the Ethernet basket

6.137 In order to calculate the starting charge adjustment, we forecast total basket costs in 2016/17 under two scenarios: one that does not take into account the adjustments above and one that does.[203] The percentage difference between the two represents our starting charge adjustment.

6.138 To illustrate this, suppose that total basket revenues in 2016/17 were £150 million while unadjusted costs, i.e. including the starting charge adjustment costs, were £100 million and fully adjusted costs, i.e. excluding the starting charge adjustment costs, were £80 million. The latter represents a 20% downward cost adjustment, i.e. one fifth of costs are not incremental to services in the basket. In this example, we would impose a starting charge adjustment of -20% in order to reduce revenues to £120 million.

6.139 Applying this methodology to the Ethernet basket results in a starting charge adjustment of -9%, which would be made at the beginning of the charge control period (i.e. on 1 April 2016). We propose to provide BT with flexibility to implement this starting charge adjustment, subject to the sub-baskets and sub-caps discussed further below, meaning that it does not need to reduce the price of all its services by 9%. Instead, it can focus price reductions on particular services, so long as the weighted reduction is equal to 9%. This is consistent with our decision to impose a broad basket. There are some services, however, that we propose should be reduced by 9% at the start of the control. We discuss these in our proposals of sub-baskets and sub-caps below.

6.140 As set out in Section 10, the adjustment would use the same revenue weights that are used to comply with the first year of the control.

[203] Under both scenarios, the cost forecasts take into account the other adjustments we are making in our model (i.e. those adjustments that do not factor into our starting charge adjustment).

Stage 5: Calculate the value of X and our proposed basket(s) of services

6.141 On the basis of the inputs and assumptions set out above, we have forecast the costs of services in the Ethernet basket for each year of the charge control. We have forecast revenues in the absence of a charge control using 2015/16 charges and volume forecasts for the charge control period. We have calculated the X values so as to bring forecast revenues in line with forecast costs by the final year of the charge control (2018/19).[204] Based on the proposals outlined in this Section, our proposed base case value of X for the Ethernet basket is -13.75%.

6.142 Historically, for charge control consultations Ofcom has tended to set ranges for X using 'low' and 'high' scenarios that have been modelled on the basis of sensitivity analyses.[205] However, in the case of this control we consider that attempts to model the potential impacts of alternative input parameters are unlikely to provide useful information for the purposes of setting ranges. In the case of the Ethernet basket, we consider that the most significant impacts that could cause us to depart from our base case X in the 2016 BCMR Statement, in addition to the standard modelling inputs and approach risks, relate to:

- updating the base year financial data for BT's 2015 RFS and making appropriate adjustments to this data; and
- changes to our proposed dark fibre remedy that would require us to account for it differently.[206]

6.143 At this stage it appears equally likely that these changes could lead to an X above or below our current base case. Therefore, we propose a control of CPI-13.75% for the Ethernet basket as the base case, with a range of CPI-9.75% to CPI-17.75%%.

6.144 In Annex 6 we have performed a sensitivity analysis on the key inputs and assumptions used for the cost forecasting of Ethernet services. The purpose of the sensitivity analysis is to provide an indication of how sensitive the modelled X is to changes in the key input parameters.

Sub-baskets and sub-caps

6.145 Following our discussion of the potential impact of our proposed dark fibre remedy above we now consider the need for any sub-baskets or sub-caps, completing Stage 1 of our framework.

We propose a sub-basket on EAD 1Gbit/s services

6.146 As set out in the May 2015 BCMR Consultation, we are proposing a dark fibre remedy outside the CLA. Furthermore, as set out in Section 8, we propose two

[204] When calculating revenues and costs in 2018/19, we do so in real terms using 2015/16 prices.
[205] For example, see Ofcom, *Leased Lines Charge Control: Proposals for a new charge control framework for certain leased lines* services, 5 July 2012, http://stakeholders.ofcom.org.uk/binaries/consultations/llcc-2012/summary/LLCC_2012.pdf (July 2012 LLCC Consultation); and Ofcom, *Fixed access market reviews: Approach to setting LLU and WLR charge* controls, 20 August 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU_WLR_CC_2014.pdf (August 2013 LLU/WLR Consultation).
[206] If, following consultation, we were to decide not to impose a dark fibre remedy, we may change our approach to pricing remedies in the wholesale CISBO market.

variants of dark fibre: one linked to the price of EAD 1Gbit/s, and the other to EAD LA 1Gbit/s.

6.147 Given that there is a direct link between active and dark fibre charges, we consider it important to ensure that BT is not able to charge excessive active, and therefore also dark fibre, charges, and that it does not use its pricing flexibility to dis-incentivise the use of the proposed dark fibre remedy. It could do this, for example, by focusing price reductions on 10Mbit/s and 100Mbit/s services, while limiting reductions to 1Gbit/s services, which is linked to the dark fibre charge. In order to mitigate this risk, we therefore propose to impose a sub-basket of CPI-13.75% on EAD 1Gbit/s service charges. This will ensure that these charges fall in line with the overall basket.

6.148 Furthermore, in order to ensure consistency between the sub-basket and the starting charge adjustment we also propose that EAD 1Gbit/s charges should be reduced by at least 9% at the start of the control period. Without this constraint, BT may implement the starting charge adjustment in a way that dis-incentivises the use of the proposed dark fibre remedy, in a similar manner to that described above.

6.149 We do not consider it necessary to also impose a sub-basket on EAD LA 1Gbit/s service charges, given that we propose in the May 2015 BCMR Consultation for the differential in EAD and EAD LA charges to reflect the long-run incremental cost differential between these two services in year two of the control.[207] We believe that the combination of this remedy and the sub-basket on EAD 1Gbit/s services will provide sufficient protection for customers of EAD LA 1Gbit/s and the relevant dark fibre product.

We propose a sub-basket on main link services

6.150 An EAD circuit that spans more than one serving exchange incurs a main link charge, which is calculated based on the radial distance between the two serving exchanges corresponding to each customer site. Openreach currently charges £0.372 per metre for all standard Ethernet Main Links at bandwidths up to and including 1Gbit/s.[208]

6.151 As main link charges are sometimes incurred when purchasing BT's EAD circuits, there is a risk that BT may use its pricing flexibility to maintain relatively high main link charges as a means of dis-incentivising the use of the proposed dark fibre remedy. This is because high main link charges would result in a high charge for EAD 1Gbit/s services, and therefore the proposed dark fibre remedy, that span more than one serving exchange. Therefore, in order to mitigate this risk we propose to impose a sub-basket of CPI-13.75% on all main link charges for services that provide bandwidths up to and including 1Gbit/s. This will ensure that these prices fall, at least, in line with the overall basket.

6.152 Furthermore, for the same reasons discussed for EAD 1Gbit/s services above, we also propose that main link charges should be reduced by at least 9% at the start of the control period in order to ensure consistency with the starting charge adjustment.

[207] Paragraphs 10.18-10.35, May 2015 BCMR Consultation.
[208] BT response dated 4 March 2015 to question B2 of the 13th s135 notice dated 26 February 2015.

We propose a sub-basket on Interconnection services

6.153 In order to consume wholesale access services, CPs need to be able to interconnect their network with that of BT. This interconnection is thus essential for any wholesale remedy to be effective.

6.154 For wholesale CISBO services up to and including 1Gbit/s, BT currently offers the following types of interconnection:

- Customer-Sited Handover (CSH). BT provides two types:
  - o without aggregation: BT terminates individual circuits at the CP's site without aggregation (i.e. interconnection is part of the service and there is no separate interconnection link); and
  - o with aggregation: BT supplies Bulk Transport Link (BTL) which aggregates multiple EBD services for delivery over a single interconnection link to the CP's site. BT provides a Points of Connection (POC) at the site of the interconnecting communications provider. In order to do so, BT has to extend its network out to the point of interconnection and provide a CSH link along with CSH POC equipment; and
- In Building Handover (IBH): BT provides a POC at collocation space rented by a CP in a BT local exchange. Currently BT terminates individual circuits in the collocation space without aggregation.

6.155 CPs do not need to purchase a specific interconnection product from BT to connect EAD and WES circuits to their network. Both IBH and CSH (without aggregation) are already incorporated within the EAD and WES circuits.

6.156 However, CPs that wish to aggregate multiple EBD circuits at a customer site currently need to purchase the BTL product. Current take-up of BTL has been low. There were [✂] BTL circuits outside the WECLA in 2013/14 and [✂]. This is forecast [✂] by the end of the charge control period.[209]

6.157 There are similarities in the characteristics of BTL products with the POH interconnection products in the TI market. Given they are purely sold externally by BT and are essential for infrastructure competition for certain products, there could be a competitive risk of placing them in a broad basket without any further constraints as BT would have an incentive to increase interconnection charges and hinder other CPs' ability to compete in downstream markets. For this reason, in the case of POH products in the TI market, we have set these charges at LRIC since 2011.

6.158 However, as we set out in the March 2013 BCMR Statement, we do not believe it is proportionate to set BTL prices based on LRIC as this would require a significant bottom-up modelling exercise.[210] We therefore propose to set a sub-basket to cover BTL products which is the same as the overall value of X for the Ethernet basket, currently CPI-13.75%. This is consistent with our approach to BTL in the current charge control. We believe that this strikes an appropriate balance between the importance of the product for competition and cost recovery. By reducing the price of the product, the competitive disadvantage OCPs face relative to BT is reduced.

[209] BT response dated 29 January 2015 to question B2 of the 8th s135 notice dated 12 January 2015.
[210] Paragraphs 20.59-20.64, March 2013 BCMR Statement.

6.159 As with EAD 1Gbit/s and Main Link charges, we also propose that BTL charges should be reduced by 9% at the start of the control period.

We do not propose a sub-basket on other connectivity services

6.160 As discussed above, a sub-basket may be appropriate for products that are largely consumed by BT's rivals. We have therefore analysed internal and external splits of different products in 2013/14 and also in the final year of the next charge control period based on our volume forecasts. This analysis is presented in Figure 6.4.

Figure 6.4: Ethernet Rental Volumes by product[211]

[✂]

6.161 The majority of Openreach's current products are consumed internally. We note that BT's downstream businesses purchase a significantly higher proportion of EAD LA circuits than EAD and so may benefit from their depth of interconnection relative to other CPs. The May 2015 BCMR Consultation proposes a remedy in relation to the differential between EAD LA and EAD charges, as set out above.[212] We therefore do not consider any sub-baskets are required in relation to these products.

6.162 However, our analysis also shows that external customers will account for the majority of BES purchases during the charge control period. They are also forecast to account for just over half of WES rentals in the last year of the control. This may give BT an incentive to set charges in a way that discriminates against other CPs, for example by targeting fewer price reductions on BES and WES services. These purchasing patterns may point towards imposing sub-caps on these services. However, we also need to take into account the consistency of any sub-caps with allowing Openreach the flexibility to encourage efficient migration. If we were to impose a sub-basket cap on BES and WES products, this may limit Openreach's flexibility in determining an optimal pricing structure and it could discourage customers from moving to more efficient alternative services.

6.163 In light of these considerations, we do not propose to place a specific sub-basket cap on BES or WES services. Instead, we consider that our general CPI-CPI sub-cap on all other charges (discussed below) will be sufficient to protect customers of these services.[213]

We propose a sub-cap on charges for all services within the Ethernet basket

6.164 A broad basket gives BT flexibility to set charges in an efficient way to recover common costs, but we impose sub-caps when we consider that this flexibility should be limited. This was the case in the March 2013 BCMR Statement , where we imposed a sub-cap (RPI-RPI) to cover the charges for all other services within the

[211] BT response dated 29 January 2015 to question B2 of the 8th s135 notice dated 12 January 2015.
[212] Paragraphs 10.18-10.35, May 2015 BCMR Consultation.
[213] We note that if prices do not increase in nominal terms then, based on 2015 LLCC Model, we expect that the aggregate charges of WES and BES services up to and including 1Gbit/s will remain below DSAC by the end of the charge control.

Ethernet basket, excluding those already covered under the Interconnection sub-basket, in order to limit BT's ability to increase the prices of particular services in any given year.[214] This was because, given the proposed value of X for the basket and our assessment of starting charges, we considered that there would be no need for Openreach to increase any charge in nominal terms.

6.165 In this case, our starting position is to set a sub-cap on charges for all services within the Ethernet basket, including those already covered under the Interconnection, 1Gbit/s EAD and Main Link sub-baskets.[215] While the level of the sub-cap is based on a judgment as to what level appropriately balances our objectives, consistent with previous decisions, we would propose to set this cap at CPI-CPI. This would again be to maintain a certain degree of flexibility for Openreach to recover costs in the way that it judges to be efficient, while restricting its ability to increase the charges of particular services in any given year (given the value of X for the basket).

6.166 However, in contrast to the March 2013 BCMR Statement, in this control we have proposed that BT should provide a dark fibre product, priced with reference to its EAD 1Git/s products. As discussed in the May 2015 BCMR Consultation, we consider it is likely that BT will ultimately need to rebalance its active prices as a result of the proposed dark fibre being available. This is because the high contributions to cost recovery it currently earns from higher bandwidth circuits are unlikely to be sustainable in the long term if the proposed dark fibre remedy is available.[216] BT is therefore likely to require some pricing flexibility in order to facilitate this active price rebalancing.

6.167 Depending on the scale of rebalancing required, there may be a concern that sub-caps could be unduly restrictive on prices for charge controlled services such that the necessary rebalancing could not occur.[217] We have therefore considered whether, in the light of this proposed remedy BT is likely to require greater flexibility in its pricing than permitted by a sub-cap. To do this, we have carried out an indicative analysis of the potential scale of price rebalancing that may be necessary in light of our proposed dark fibre remedy, and then considered whether in this context, sub-caps may be unduly restrictive.

Analysis of the potential active price rebalancing which may be required as a result of dark fibre

6.168 We set out the details of this analysis in Annex 12, but in summary, we have undertaken a snap-shot illustration of the potential scale of active price rebalancing which could be required if the proposed dark fibre remedy was introduced.

6.169 To do this, we have firstly identified which circuits would be most likely to be commercially viable with dark fibre priced on a 1Gbit/s active minus basis. Secondly,

[214] Annex 20, March 2013 BCMR Statement.
[215] We propose to apply the sub-cap to all services in sub-baskets in order to limit BT's ability to increase prices of a particular service in a sub-basket.
[216] Annex 24, May 2015 BCMR Consultation. Although BT argued in response to the November 2014 BCMR Passives Consultation that arbitrage opportunities are likely to remain irrespective of the pricing approach of the passive remedy (BT's non-confidential response to the November 2014 BCMR Passives Consultation, paragraph 6.61), given we consider that our proposed dark fibre design significantly reduces the risk of density and distance based arbitrage opportunities (as discussed in the May 2015 BCMR Consultation), we consider that targeting the bandwidth gradient is likely to be the main driver of the need for active price rebalancing.
[217] At an extreme, this could pose a risk to cost recovery overall.

in light of these identified circuits, we estimate the scale of price rebalancing that BT may need to implement for its active circuits in order to remain competitive with the dark fibre-based alternative.[218]

6.170 Given data availability, we have used 2015/16 costs and prices, but 2018/19 volumes so as to reflect the expected increase in higher bandwidth circuits in the future, so as not to underestimate the scale of rebalancing. While we recognise the potential limitations of using 2015/16 cost and price data alongside 2018/19 volumes, we consider that this still provides a reasonable basis for estimating the order of magnitude of this effect in order to inform our view of sub-caps for the purposes of this consultation.

6.171 On this basis, we estimate that approximately £2 million could, in aggregate, ultimately need to be rebalanced from higher bandwidth circuits as a result of the proposed dark fibre remedy being introduced on a 1Gbit/s active minus approach. This would be a one-off rebalancing of prices, and equates to less than 1% of the forecast Ethernet basket revenues in 2018/19 (without the X).[219]

6.172 As discussed in Annex 12, the potential pattern of active price rebalancing that might occur and its timing is unclear, and the impact on individual circuit prices could vary significantly. Therefore we do not seek to speculate on what might occur, although as described below, even in an extreme assumption of all rebalancing being focused on low bandwidth circuits the impact appears to be relatively modest.

Implications of this analysis for our sub-cap proposals

6.173 While there are clearly limitations to this illustrative analysis, and the real world commercial realities may require a more complex pricing response,[220] the analysis suggests that the potential rebalancing that could be required as a result of our proposed dark fibre remedy is of a relatively modest order of magnitude, especially compared to the proposed X of -13.75%. In particular, as a result of the control, revenues are expected to be on average approximately £158m lower in each year of the control even with dark fibre available (relative to if prices remained at their 2015/16 levels), meaning the absolute scale of rebalancing under a 1Gbit/s active minus price (£2m) represents approximately 1%.

6.174 To illustrate, we have considered an extreme scenario whereby the burden of rebalancing fell entirely on sub-1Gbit/s EAD and EAD LA circuits, i.e. the full £2m

[218] As described in Annex 12, we estimate this based on the differential between the active price of circuits which could viably be provided with dark fibre and the price of dark fibre plus the active specific incremental costs, multiplied by the corresponding volumes. This is on the basis that at the extreme, we might expect that all active circuits which can viably be provided with dark fibre could ultimately end up being priced at a level equal to the dark fibre price plus the active-specific incremental circuit costs so that BT remains competitive (otherwise, if BT tried to price such circuits above this level, equally efficient CPs could switch to dark fibre and supply the active-specific incremental costs themselves).

[219] In comparison, this figure increases to approximately £78m under an average active minus dark fibre pricing approach (or 12% of the forecast Ethernet basket revenues in 2018/19 (without the X)). This illustrates the potential impact of the design of the passive remedy (and in particular, the pricing options) can have on the risk of distributional concerns, as discussed in Annex 24, May 2015 BCMR Consultation.

[220] We note that BT also argued that setting the right price once the size of common cost recovery is estimated would be much more complex than the November illustration assumed, involving a wide range of uncertainties (e.g. in relation to active and passive volume forecasts). BT's non-confidential response to the November 2014 BCMR Passives Consultation, paragraphs 6.49-6.52.

was added to these circuit rentals. This would equate to an additional £19 per rental, based on 2018/19 volumes, if the full rebalancing occurred in one year, which is equivalent to a 1% rental price increase from 2015/16 levels. Therefore even under this extreme scenario, it appears that BT would be able to comply with the charge control without increasing the price of these services in nominal terms, and would still have significant flexibility in doing so, given the gap between the increase that would be required and the value of X.

6.175 As a result, we do not consider that a sub-cap would prevent BT from rebalancing its active prices, subject to their level. Indeed, this analysis would tend to suggest that the scale of rebalancing would need to be significantly higher than indicated here for a fundamental concern around the imposition of any sub-cap to arise.

Our sub-cap proposals

6.176 Therefore we consider it appropriate to propose a sub-cap to cover the charges for all services within the Ethernet basket. We propose to set this cap at CPI-CPI. If CPI were to increase significantly to above 5%, we propose that the cap would adjust to CPI-5%, to avoid the differential between the basket cap and the sub-cap becoming too small. The sub-cap will also apply to our proposed starting charge adjustments, such that when making the latter BT will not be able to increase any charge in nominal terms.

6.177 On balance, we believe that this proposal maintains a certain degree of flexibility for Openreach to rebalance its active charges and recover costs in the way that it judges to be efficient, while restricting its ability to increase any given charge. Given the proposed value of X for the basket, our illustrative estimate of the potential scale of price rebalancing that may be required, and our assessment of starting charges, we consider that there is no need for Openreach to increase any charge in nominal terms.

Ancillary services

6.178 Ancillary services are payments that Openreach levies from customers for other services used in the provision of core Ethernet services. They have traditionally been comprised of services such as ECCs, TRCs, circuit upgrades and migrations and additional resilience options.

6.179 Our proposed treatment of ECCs and TRCs are discussed in Section 9. As in the March 2013 BCMR Statement we intend to apply a different cap to ECCs to reflect the particular pricing and cost issues that are relevant to these services.

6.180 The remaining ancillary services are likely to account for a small proportion of our proposed Ethernet basket revenues.[221] Given they would have a low revenue weight, including them in the main basket without a safeguard is unlikely to result in an effective control of their charges. However, we believe that our proposal for a sub-cap on other charges within the Ethernet basket addresses these concerns as we do not have any reason to have greater concerns about these charges compared to others in the basket. It also covers the diverse and individualised nature of the various ancillary services sold by Openreach and has the merit that it is easy to monitor and for Openreach to demonstrate compliance.

[221] We cannot calculate the proportion precisely because [✂].

Consultation questions

Question 6.1: Do you agree with our basket design proposals for Ethernet services, including the need for sub-caps and/or sub-baskets? If not, what alternative would you propose and why?

Question 6.2: Do you agree with our approach to deriving our base year costs for Ethernet services, including in particular:

a. *our proposal in relation to the technology assumed for supplying controlled Ethernet services for modelling purposes;*
b. *our proposed cost adjustments to BT's 2013/14 RFS to form the base year costs; and*
c. *our proposed treatment of BT's costs relating to QoS?*

If not, what alternative would you propose and why?

Question 6.3: Do you agree with our approach to forecasting costs and revenues over the period of the charge control in relation to Ethernet services, including in particular:

a. *our volume forecasting assumptions;*
b. *our efficiency forecasting assumptions; and*
c. *our proposal to reflect the impact of the proposed dark fibre remedy?*

If not, what alternative would you propose and why?

Question 6.4: Do you agree with our proposals in relation to starting charge adjustments for Ethernet services? If not, what alternative would you propose and why?

Question 6.5: Do you agree with our proposals in relation to the value of X for Ethernet services. If not, what alternative would you propose and why?

Section 7

Proposed controls for TI services

Introduction

7.1 In this Section, we set out our proposals on the charge controls for low bandwidth TI services in the UK, excluding the Hull area.[222] In particular, we explain our proposals with regard to:

- the scope and design of the charge control basket;
- the need for sub-caps and/or sub-baskets;
- our proposals in relation to deriving our base year costs, including the technology assumed for supplying controlled TI services for modelling purposes and our proposed cost adjustments to BT's 2013/14 RFS to form the base year;
- our approach to forecasting costs and revenues over the period of the charge control, including:
    - our volume forecasting assumptions; and
    - our efficiency forecasting assumptions;
- our proposals in relation to making starting charge adjustments; and
- our proposed range and base case for the value of X.

7.2 This section follows the proposed framework for charge control design and our proposed approach to applying it set out in Sections 4 and 5 respectively, similarly with our proposals for the charge control for Ethernet services in Section 6.

7.3 Further details of how we have estimated costs and revenues can be found in Annexes 6-9.

Summary of key proposals

We propose a single TI basket charge controlled at CPI-12.25% with sub-cap and sub-basket controls

7.4 We propose to charge control TI services within a single basket (TI basket). We propose that the price cap for this basket should be in the range CPI-6.25 to CPI-14.25%, with our proposed base case of CPI-12.25%.[223]

7.5 We are also proposing some sub-cap and sub-basket controls where we believe that the overall basket cap would not offer sufficient protection to customers. Table 7.1

[222] We note that terminating segments include elements currently defined as regional trunk. As discussed in the May 2015 BCMR Consultation (paragraphs 5.38-5.40), we do not propose to define a separate market for regional trunk as we did in the March 2013 BCMR Statement.
[223] As set out below, we also propose to make adjustments to the starting charges for the control. Our proposed value of X of -12.25% is in addition to these starting charge adjustments.

below summarises our proposals with further details about the specific services falling within this proposed TI basket, together with our proposed sub-cap and sub-basket constraints, based on our value of X.

Table 7.1: Proposed TI basket control[224]

Services within scope	Basket cap	Sub-cap and sub-basket constraints
Connection and rental charges for: Wholesale low bandwidth TISBO up to and including 8Mbit/s RBS, NetStream 16 Longline and SiteConnect Interconnection services TI Equipment and Infrastructure TI ancillary services (excluding ECCs and TRCs)	CPI-12.25%	2Mbit/s RBS, NetStream 16 Longline and SiteConnect services (CPI-12.25%) Sub-cap on all charges (CPI-CPI on each charge)

Source: Ofcom

We propose to make a starting charge adjustment

7.6 Following the principals set out in Section 4, we propose to make a starting charge adjustment of -7.75% to services in the TI basket. As with our starting charge adjustment proposal for the Ethernet basket, we propose to provide BT with flexibility to implement this adjustment, subject to the sub-basket and sub-cap constraints we set out, as this is consistent with our proposal to implement a broad basket. BT will therefore not be required to reduce the price of each and every charge by 7.75% at the start of the control; rather the weighted average reduction should equal this amount.

Summary of approach

Our proposed controls are based on our forecasts of revenues and costs over the control period

7.7 We set out in Sections 4 and 5 and Annexes 6-11 the design of our charge control and the details of how that design is implemented. However, in broad terms we set the proposed value of the X so as to bring our forecast revenues into line with our forecast costs in the final year of the charge control.

7.8 Our proposed cost forecasts start with detailed regulatory financial reporting information from BT for our modelling base year of 2013/14. We then forecast how the different types of costs for TI services might vary with respect to the underlying volume changes, subject to assumptions such as efficiency, input price changes and the WACC. The TI services covered include PPCs, RBS, NetStream 16 Longline and SiteConnect, Interconnection services, TI Equipment and Infrastructure, and TI ancillary services, excluding ECCs and TRCs.

[224] Our proposals exclude the Hull area.

7.9 We have calculated what the revenues would be at the end of the charge control by multiplying our forecast service volumes by their respective charges at the start of the control, absent of any charge changes over the control period. We have then calculated the value of X to close the gap between these revenue and cost forecasts.

We propose to model the costs of providing TI services on the basis of the existing technology

7.10 We propose to base our cost forecasts for TI services on the basis of the existing technology used to provide them.

We propose adjustments to BT's base year costs in 2013/14

7.11 We propose adjusting the cost data provided by BT to ensure that these are representative of the relevant level of costs for forward-looking charge control purposes, while remaining consistent with the principle of cost recovery. Those adjustments provide a suitable basis for forecasting costs for the purposes of setting the charge control.

We propose to forecast continued TI volume decline until 2018/19

7.12 We have generated volume forecasts for TI services and forecast all low bandwidth volumes to decline during the charge control period. This is likely to be driven by BT ending support for its Plesiochronous Digital Hierarchy (PDH) platform, which supports sub-2Mbit/s services, the availability of NGA broadband and EFM services and increasing demand for higher bandwidths where Ethernet is a cheaper technology.

We propose an efficiency assumption of 4% to 7% for TI services

7.13 We propose an appropriate efficiency range for the provision of TI services is 4 to 7% with a base case assumption of 5%. This is based on a consideration of various sources of evidence.

Stage 1: Identify relevant services and appropriate charge control basket structure

7.14 In Section 5 we set out our proposal to have separate baskets for Ethernet and TI services. In this sub-section we set out our proposals in relation to basket design for TI services.

7.15 We propose a single charge control basket, the TI basket, for the following groups of low bandwidth services, i.e. up to and including 8Mbit/s:

- Partial and Private Circuits (PPCs), including both standard maintenance and enhanced maintenance;
- RBS backhaul, NetStream 16 Longline and SiteConnect;
- Interconnection services;
- TI Equipment and Infrastructure; and
- TI ancillary services excluding ECCs and TRCs.

7.16 Charges for both connection and rental are included in the TI basket for each of these services.[225]

7.17 We propose that Ethernet services are separately controlled within a different charge control basket. We discuss the rationale for not proposing a combined TI and Ethernet basket in Section 5.

7.18 In addition, we propose some sub-baskets[226] and sub-caps[227] where we believe that a further safeguard would be necessary to effectively control the prices of certain services, namely:

- a sub-basket of 2Mbit/s RBS backhaul, NetStream 16 Longline and SiteConnect; and
- a sub-cap on all charges, i.e. including those services in the sub-basket specified above.

7.19 As set out in Section 4, in determining the appropriate charge control baskets, we have sought to balance the following four considerations:

- **efficient charging structures** - where the services being considered share substantial common costs, a single basket can be more conducive to efficient charges and cost recovery;
- **competition** – where the services being considered face different competitive conditions or BT does not use the same wholesale inputs as its rivals, placing them in the same charge control basket may give BT an incentive to set prices in a way that undermines competition;
- **migration incentives** – where it is appropriate for BT to encourage migration from a legacy service to a more efficient service, placing the services in the same basket would allow BT the required pricing flexibility; and
- **consistency with other rules** – our design of baskets should take into account other rules and ensure that it does not require BT to breach these other rules.

7.20 We discuss the first three of these considerations below and explain the case for a broad TI basket.

We propose a broad TI basket

7.21 We propose to have a broad basket for TI services.

Efficient charging structures

7.22 PPCs and RBS backhaul services account for the majority of low bandwidth TI revenues (over 90% in 2013/14).[228] Our proposed basket includes terminating segments[229] and it includes all bandwidths up to and including 8Mbit/s, though in

[225] Rental charges for TI include all charges that are payable by the customer, including those for local end, main link, distribution/transmission and elements currently defined as regional trunk.
[226] We use the term 'sub-basket' when referring to a control on a group of two or more charges.
[227] A 'sub-cap' refers to a control on a single charge.
[228] BT response dated 25 March 2015 to question B1 of the 13th s135 notice dated 26 February 2015.
[229] Including elements currently known as regional trunk.

practice BT's services mostly relate to 64kbit/s and 2Mbit/s services.[230] Services across these bandwidths are highly likely to share significant common costs and, for reasons already explained in Section 4, by placing the services in a single charge control basket we consider that BT would have the incentive to set prices and recover common costs efficiently. If we were instead to create separate baskets for each product or for each individual charge, we would have to decide on the appropriate proportion of common costs to be recovered within each basket, which may change over the control period.

7.23 Given the complexity of identifying the appropriate pattern of common cost recovery and the benefits of a degree of flexibility should these patterns of recovery change over time, we consider that it is appropriate that BT is afforded some flexibility to identify the appropriate way for these costs to be recovered.

7.24 We therefore consider that the promotion of efficient charging structures and cost recovery would suggest it is appropriate to design a broad basket for TI services.

Competition and migration incentives

7.25 Although we believe a single basket is appropriate, BT may have an incentive to target price reductions on services that its downstream businesses are more likely to use. As set out in Figure 7.1 below we have compared the internal and external consumption splits for 64kbit/s and 2Mbit/s PPCs in 2013/14 and 2018/19 based on our volume forecasts, disaggregated by the different charging elements of a PPC.

Figure 7.1: BT's internal vs external PPC volumes by charging element and bandwidth

[✂]

7.26 The data shows that although BT's downstream businesses currently account for the majority of purchases at 64kbit/s and 2Mbit/s, the former is forecast to change by the end of the control period, with external customers accounting for the majority of 64kbit/s purchases. BT may therefore have an incentive to focus price reductions on 2Mbit/s services during the charge control period, to the detriment of downstream competition.

7.27 However, there are also migration considerations as 64kbit/s services are currently delivered using BT's legacy DPCN[231] platform, which it intends to close in 2021. This platform is now over 30 years old and BT has indicated that it is difficult to maintain, with both maintenance costs and the risk of service failure increasing over time. Furthermore, we are expecting users of these services to develop and implement migration plans during the next charge control period.[232]

7.28 Allowing BT flexibility to impose fewer price reductions on 64kbit/s services relative to 2Mbit/s services is consistent with incentivising customer migration from very low bandwidth leased lines to Ethernet or, alternatively, higher bandwidth TI lines (which

[230] Customers are able to purchase a range of bandwidths below 2Mbit/s but these are generally delivered in multiples of 64kbit/s.
[231] Digital Private Circuit Network.
[232] Ofcom, *Business Connectivity Market Review. Very low bandwidth leased lines – Consultation,* 15 May 2015, http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/ (May 2015 Very Low Bandwidth Services Consultation).

do not use the DPCN platform) or other services such as broadband. We therefore consider it appropriate to include all low bandwidth PPCs in a single basket and we do not propose to impose a specific sub-cap on PPC 64kbit/s charges. Instead they will be subject to a cap of CPI-CPI, which will apply to all services in the TI basket, outlined below. We believe this strikes an appropriate balance between giving BT some flexibility to promote efficient migration while ensuring that downstream competition is not distorted by prices which do not reflect costs.[233]

7.29 We also note from Figure 7.1 the differences in internal and external purchases of individual PPC elements, for example BT purchases a higher proportion of 2Mbit/s local end and trunk volumes compared to links and distribution.[234] BT may therefore have a greater incentive to focus price reductions on local ends relative to links and distribution. Also, as discussed below, our analysis for starting charge adjustments has shown that BT's current PPC 2Mbit/s link charges are higher than DSAC. The fact that they appear to be relatively high *and* more likely to be consumed externally by the end of the control may therefore represent a concern.

7.30 We have considered whether to impose a separate sub-cap on PPC 2Mbit/s links. Our provisional view is that a separate sub-cap is not necessary. External customers are expected to account for just over half of 2Mbit/s link purchases in 2018/19 (compared to slightly less than half in 2013/14). Given that the internal proportion will therefore remain relatively high (i.e. almost one half), BT's ability or incentive to distort pricing in a manner that results in other operators incurring significantly higher overall 2Mbit/s PPC charges than BT's downstream businesses will be limited.[235]

7.31 After PPCs, RBS backhaul services account for the largest proportion of revenues in the low bandwidth TI basket (around one third in 2013/14).[236] They are provided using the same underlying components as PPC circuits and so are likely to share significant common costs. However, a key difference is that RBS services are currently sold to external customers only. BT may therefore have an incentive to concentrate price reductions on PPCs, rather than RBS backhaul services.

7.32 In this particular case, we consider that it is possible to achieve the benefits of a broad basket, by including both PPCs and RBS services, and mitigate the risk of BT focusing price reductions (increases) on PPCs (RBS) by designing appropriate sub-baskets. We discuss this below.

[233] We note that, based on our forecasts for service FAC and DSAC, BT's current charges of 64kbit/s PPC services are expected to be significantly less than DSAC in 2018/19 when considered in aggregate, which suggests that restricting any nominal price increases will ensure that customers of sub-2Mbit/s services do not incur excessive charges.

[234] If a PPC is handed over in a different serving exchange to the end-user site, there is a fixed main link charge (we refer to this as a 'link') and a distance-based charge for the terminating segment (we refer to this as 'distribution'). 'Trunk' refers to regional and national trunk; these are distance-based charges based on TAN catchment areas defined in the March 2013 BCMR Statement. National trunk is currently not regulated while regional trunk is regulated and charge controlled. In the 2015 May BCMR Consultation we proposed to include regional trunk within the terminating segments market (Section 5 and Annex 19).

[235] We also note that our analysis of aggregate PPC services suggests that, for a three year contract, the charges associated with main links account for around 10% of the total contract value on average. The charges for local ends and distribution represent a significantly higher proportion, almost two thirds combined. Therefore, the charges that account for the biggest proportion of 2Mbit/s PPC contracts are not currently priced excessively.

[236] BT response dated 25 March 2015 to question B1 of the 13th s135 notice dated 26 February 2015.

Consistency with other rules

7.33 The fourth consideration, consistency with other rules, is discussed in Section 5 in relation to our proposals to have separate TI and Ethernet baskets. This is an important consideration in our decision to have separate TI and Ethernet baskets, as discussed in Section 5. However, it is not a relevant consideration for determining basket design for TI services only for which the pricing decisions are all made by BT Wholesale.

7.34 We therefore consider that, on balance, it is appropriate to design a broad basket for TI services.

Sub-baskets and sub-caps

We propose a sub-basket on 2Mbit/s RBS backhaul, NetStream 16 Longline and SiteConnect services

Radio Base Station (RBS) backhaul services

7.35 As discussed above, RBS backhaul services are currently sold to mobile operators. These mobile operators also provide some competition for BT's downstream voice service. In these circumstances, there may be an incentive for BT to concentrate price reductions on PPCs, rather than RBS backhaul services. Therefore, we consider that it would be appropriate to have an explicit safeguard within the charge control to counteract this incentive and protect RBS backhaul customers from any potential incentives BT may have to discriminate against mobile operators.

7.36 We believe that imposing a sub-basket constraint on RBS backhaul services within the TI basket provides a safeguard against potential competition concerns, while still allowing BT some flexibility to set prices and recover common costs efficiently. We therefore propose a sub-basket cap on 2Mbit/s RBS services that is consistent with the overall basket cap, currently CPI-12.25%.

7.37 We do not propose to include sub-2Mbit/s RBS backhaul services in this sub-basket. Although these are only used by customers that are external to BT, we believe it is important to allow BT the flexibility to incentivise customers to migrate from very low bandwidth leased lines. We therefore consider that a cap of CPI-CPI, which will be applied to all other charges not within the sub-basket, strikes a reasonable balance. This is also consistent with our treatment of 64kbit/s PPC services, where external customers are forecast to account for the majority of purchases by the end of the control period.

NetStream 16 Longline and SiteConnect

7.38 Like RBS backhaul services, NetStream 16 Longline and SiteConnect services are currently sold to mobile operators. They accounted for around 4% of low bandwidth TI revenues in 2013/14.[237] The reasoning set out above for RBS backhaul services therefore also applies to these services. We therefore also propose to include these services in the 2Mbit/s RBS backhaul sub-basket.

[237] BT response dated 22 January 2015 to question B1 of the 8th s135 notice dated 12 January 2015.

Interconnection services

7.39 Each PPC purchased by a CP requires a connection between the CP's network and BT's network. This interconnection is provided through a POH that CPs must purchase from BT. POHs are only purchased by OCPs (and not BT itself) and are essential for infrastructure based competition among providers of leased lines.

7.40 Given that POH services are purely sold externally by BT and are essential for infrastructure competition, there could be a competitive risk of placing them in a broad basket without any further constraints. Revenues from POH services were less than 1% of low bandwidth TI revenues in 2013/14.[238]

7.41 In the *LLCC PPC Points of Handover pricing review* (the September 2011 POH Statement),[239] we explained why CPs should only pay charges based on the LRIC associated with their demand for POH and we developed a bottom-up LRIC model for the charges covered in the September 2011 POH Statement.[240] They have also been subject to a sub-basket with a price control of RPI-0% since the March 2013 BCMR Statement.[241] We do not have evidence to suggest that the costs have materially changed since September 2011.

7.42 In the March 2013 BCMR Statement, we also considered the level of other PPC and RBS POH charges that were not covered in the September 2011 POH Statement.[242] Rental charges not covered by the September 2011 POH Statement amounted around £1 million in 2013/14.[243] There were no PPC POH connections in 2013/14. We believe it would be disproportionate to undertake a detailed review of these costs, particularly as we found the charges to be consistent with LRIC in the March 2013 BCMR Statement.[244]

7.43 We therefore propose to maintain a similar constraint on POH charges. We do not believe that BT has any strategic incentive to re-balance the charges across different POHs because, given that all are purchased by CPs, there is no clear reason to favour one type of POH product over another.

7.44 As set out below, we are proposing a sub-cap of CPI-CPI on all charges in the TI basket. We believe that this represents a sufficient safeguard for PPC and RBS POH services given that Points of Handover were set at LRIC in 2011. This is reflected by the fact that the return on mean capital employed[245] for these services was negative (-11.9%) in 2013/14.[246] A sub-cap of CPI-CPI will ensure that overall POH charges will be at no more than their current level in nominal terms throughout the charge control period.[247]

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[238] £3 million compared to 378 million. BT's 2013/14 RFS.
[239] Ofcom, *LLCC PPC Points of Handover pricing review. Final Statement on modification of SMP Conditions - Statement*, 21 September 2011, http://stakeholders.ofcom.org.uk/consultations/revision-points-handover-pricing/final-statement/ (September 2011 POH Statement).
[240] There were eight charges, known as Type II rental charges and Type I additional charges, and these made up over 50% of the total TI POH revenue for 2010/11. See Annex 6.
[241] Paragraphs 19.97-19.101 in the March 2013 BCMR Statement.
[242] Annex 6, July 2012 LLCC Consultation.
[243] BT's 2013/14 RFS.
[244] Annex 6, July 2012 LLCC Consultation.
[245] On a CCA FAC basis.
[246] BT's 2013/14 RFS.
[247] We note that this sub-cap represents a minor departure from the current sub-basket with a price control on POH (RPI-0%). However, we believe that there are practical advantages associated with

We propose a cap on each charge for all services within the TI basket

7.45 We have explained above that we are proposing sub-basket and sub-caps on particular services, where we have concerns that these charges would not be adequately protected by the overall basket cap.

7.46 In addition, we propose to set a sub-cap on charges for all services within the TI basket. Such a sub-cap would limit BT's ability to increase the prices of particular services in any given year. Our overall TI basket is broad and includes a large number of individual charges. As explained above, this broad basket gives BT flexibility to set prices in an efficient way to recover common costs. Nevertheless, we consider that this flexibility should not be unlimited, particularly as charges that have a small weight in revenue terms, e.g. POH, infrastructure and equipment charges, could be significantly increased.

7.47 We have used such sub-caps in a number of previous charge controls, including the July 2009 LLCC Statement and March 2013 BCMR Statement. The choice of a level for the sub-cap is largely based on regulatory judgment, and balancing the benefits of flexibility for BT with the risks to customers or potentially disruptive effects to competition of sharp increases in prices for some services.

7.48 We propose to apply a sub-cap of CPI-CPI to all services in the TI basket. If CPI were to increase significantly to above 5%, we propose that the cap would adjust to CPI-5%, to avoid the differential between the basket cap and the sub-cap becoming too small. We consider that a sub-cap at this level provides BT with an appropriate degree of flexibility to balance charges and recover costs efficiently. It would also promote sustainable competition and confer the greatest possible benefits on end-users by preventing BT from undue rebalancing of charges.

Anomalies in current TI basket

7.49 In a submission to Ofcom, BT Wholesale argued that the TI basket defined in the March 2013 BCMR Statement gave rise to a number of inconsistencies and conflicts with the way prices are set. Specifically, it identified three issues:

i) some products are included in two baskets;

ii) there are some charges within contracts that are linked to the price of other services yet the linked services appear in different baskets; and

iii) some products appeared to be in the wrong basket.[248]

7.50 BT Wholesale stated that the products that are affected are protected path circuits, POH infrastructure, bandwidth upgrade charges, circuit moves, cancellation charges and miscellaneous equipment connection and rental charges.

7.51 As discussed above, we are currently proposing a sub-basket on 2Mbit/s RBS, SiteConnect and NetStream 16 Longline charges as well as a sub-cap on each and every other charge. We are no longer retaining a separate sub-basket for POH and separate sub-caps for ancillary, infrastructure and equipment services. Therefore,

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having as few different levels of sub-caps in the control (namely around implementation and unnecessarily complicating our basket design).

[248] BT, *Contents of charge control baskets*, 12 December 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/market-reviews/LLCC/bt.pdf.

BT's perceived anomalies that currently exist in the TI basket should no longer exist under our proposals.

Stage 2: Determine base year costs

We propose to base our cost forecasts for TI services on the basis of the existing technology used to provide the services

7.52 Section 4 sets out the approaches to determine the technology used in the 2015 LLCC Model as a reference to set charges. In this Section, we apply these principles to the services in the TI basket by addressing the following questions:

- can we identify the MEA for delivering the TI services?
- can we calculate robust cost estimates for TI services based on the MEA?
- would the use of the MEA allow an efficient operator the opportunity to recover its costs? and
- does the MEA approach give appropriate migration signals to consumers?

7.53 In March 2013 BCMR Statement, we considered two distinct parts of TI services as the relevant technological change was different for the two cases. These were TI terminating segments and TI services in the core.[249] In what follows, we summarise our views in the March 2013 BCMR Statement and then present our current views for this charge control period.

March 2013 BCMR Statement

7.54 In March 2013 BCMR Statement we based our cost forecasts on the existing technology for TI terminating segments. We considered three alternative technologies to TI as potential MEAs for the provision of terminating segments: broadband, virtual private networks (VPNs) and Ethernet.[250] We found that we could not identify an MEA, since there were no alternative technologies that fulfilled the conditions of being able to provide the same service as the existing technology to at least the same level of quality and to the same groups of customers.[251]

7.55 In particular we found that:

- broadband had service characteristics that are significantly different from TI services including, for example, broadband did not offer dedicated point-to-point connectivity between two customer end points; [252]
- VPNs accessed via broadband did not provide the same reliability, performance or security as leased lines services. VPNs accessed via leased lines made heavy

[249] Although we only charge control TI terminating segments and not TI services in the core network, if the technology that is used to provide core network services is different and more efficient than the technology used to provide terminating segments, we may consider estimating the costs of the latter based on the newer technology. We therefore consider it relevant to review all technologies that are used to deliver TI services.
[250] Paragraph 7.55, June 2015 LLCC Consultation.
[251] Paragraph 19.107, March 2013 BCMR Statement.
[252] For our full explanation of the service differences see paragraph 19.109, March 2013 BCMR Statement.

use of leased lines as an input and were best characterised as a downstream service rather than as a substitute;[253] and

- Ethernet was not able to replicate certain important service characteristics of TI services. For example, Ethernet could not achieve the same standards in terms of resilience as TI services.[254]

7.56 Similarly, in the March 2013 BCMR Statement we based our cost forecasts on the existing technology for TI services in the core.[255] The delivery of leased lines services over BT's core network has traditionally been based on Synchronous Digital Hierarchy (SDH) technology. BT has over a number of years been developing 21st Century Network (21CN) technologies for its core network, including new 21CN SDH technology.[256] We noted that some core traffic was delivered over 21CN SDH, but that this was on an ad hoc and very limited basis. We concluded that, although 21CN SDH technology may eventually be used to deliver TI leased lines services over the core of BT's network, we could not calculate robust cost estimates.[257]

We propose to base our cost forecasts on the existing technology

7.57 We propose to continue to set charges for the next charge control period for TI services (terminating segments and services over the core[258]) using the costs and asset values of the existing technology that is currently used to deliver these services.

7.58 For terminating segments, although TI is a relatively old technology, we have not identified a proven modern substitute which delivers the same service to the same level of quality to the same customer base. We consider that differences between TI terminating segment services and broadband, VPNs and Ethernet remain as set out in the May 2015 BCMR Consultation[259] and we have not identified any new potential substitutes.

7.59 For TI services delivered over the core, we understand that the traffic routed over BT's 21CN SDH remains, and will likely remain for the coming control period, on a limited and ad hoc basis. [✂][260]

7.60 Due to the limited roll out of the 21CN SDH for TI services, establishing robust costs for the 21CN SDH assets is likely to be difficult. This means that, regardless of whether or not BT's 21CN could be considered to be the MEA for TI services delivered over the core, there are practical difficulties in implementing an MEA

[253] For our full explanation of the service differences see paragraph 19.110, March 2013 BCMR Statement.
[254] For our full explanation of the service differences see paragraph 19.111, March 2013 BCMR Statement.
[255] Although we do not regulate or charge control services in the core network (defined as national trunk in the March 2013 BCMR Statement), some of the costs are included in our model as they can affect the costs of regulated services, due to economies of scale and scope.
[256] The delivery of leased lines services over BT's core network has traditionally been based on SDH technology. The development of 21CN technology (including next generation of SDH technology) in the core is progressing and BT has migrated some internal services to be delivered over the 21CN core.
[257] Paragraphs 19.113-19.116, March 2013 BCMR Statement.
[258] See footnote 250 above.
[259] Section 5, May 2015 BCMR Consultation.
[260] Question 2 and 3, BT response to the 4th s135 notice dated 6 November 2014.

approach. This is consistent with our findings in the March 2013 BCMR Statement.[261] We therefore propose to continue basing our charges on the existing technology.

We propose not to adjust for a declining market/depreciated assets

7.61 A number of the network assets BT uses to provide TI services are now relatively old and heavily depreciated. As we set out in Annex 5, [✂] We set out our view on these arguments in Annex 5. However, [✂], we have also considered whether it is appropriate to modify our cost forecasts to take account of the extent to which some of BT's assets relevant to TI services are heavily depreciated.

7.62 Such adjustments could include so-called 'hypothetical on-going network' (HON) adjustments. Ofcom has used such an approach in a number of contexts; e.g. in setting charge controls for wholesale broadband access in 2011[262] and 2014,[263] ISDN30 in 2012,[264] and call origination and call termination in 2009.[265] HON adjustments typically involve the firm's capital costs within the charge control forecasts being increased to reflect those that would be faced by a firm operating a hypothetically on-going network. This typically involves adjusting the net replacement cost of the firm's assets to reflect a ratio of net replacement cost to gross replacement cost of around 50%,[266] but can also involve adjustment to other aspects of the firm's capital costs, e.g. assumed asset lives.

7.63 HON adjustments are typically used by Ofcom in circumstances where there is a period of transition from the legacy technology, upon which the cost forecasts are based, to a newer technology. The use of a HON adjustment can help smooth the path of prices over this period and ensure that customers face efficient migration signals, where appropriate, and the firm has appropriate incentives to continue to invest in the new technology. However, as a HON adjustment may involve assuming higher capital costs in the charge control than actually faced by the firm for the legacy technology, it might lead to customers paying charges in excess of those required by the firm to only recover its costs associated with the legacy technology. A regulatory judgment is therefore required as to whether there are sufficient efficiency benefits associated with any improvement in customer migration incentives and/or the firm's incentives to invest in replacement technologies to outweigh the dis-benefits of setting higher charges than would necessarily otherwise be the case.

7.64 We considered whether to adopt a HON adjustment in relation to TI services in the March 2013 BCMR Statement. These considerations were particularly in light of the expenditure BT had been incurring in relation to the newer 21CN SDH transmission equipment to replace legacy SDH equipment (as discussed above). We decided

[261] Paragraph 19.115, March 2013 BCMR Statement.
[262] Paragraphs 5.92-5.96, Ofcom, *WBA Charge Control, Charge control framework for WBA Market 1 services, Statement,* 20 July 2011, http://stakeholders.ofcom.org.uk/binaries/consultations/823069/statement/statement.pdf (July 2011 WBA Charge Control Statement).
[263] Paragraphs 3.14-3.39, June 2014 WBA Statement.
[264] Paragraphs 3.62 and 3.65, April 2012 ISDN30 Statement.
[265] Paragraphs 1.16-1.22, Ofcom, *Review of BT's Network Charge Control, Explanatory Statement and Notification of decisions on charge controls in wholesale narrowband markets*, 15 September 2009, http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/statement/nccstatement.pdf
[266] I.e. a ratio more consistent with those we would expect to observe for a hypothetical on-going network.

against making such an adjustment. We explained that the uplift would "*overstate the costs of running the network*" and that *"[✂]*".[267]

7.65 We propose to conclude that a HON adjustment for BT's TI services would also not be appropriate for the 2016 LLCC period. We do not consider that there are sufficient benefits in this case to warrant adopting a HON adjustment.

7.66 In terms of customer migration incentives, we note that:

- TI services remain open to new supply and, as we understand it, BT intends to continue to provide TI services for at least the period of the 2016 LLCC; and
- over recent years a considerable proportion of TI customers have migrated to alternative services, such as broadband and Ethernet. This implies that although price differentials are significant, the current pricing of TI services, which does not involve a HON adjustment, does not appear to be significantly undermining customer migration incentives.[268]

7.67 While in terms of BT's investment incentives, we note that:

- TI services and some of the equipment used to provide them, for example SDH transmission equipment, are relatively old and therefore BT may incur costs in repairing, and in some cases replacing, these assets over this control period. However, our approach to modelling BT's efficient costs of providing TI services does involve an allowance for BT to undertake activities, such as capital expenditure, to continue to run the network; and
- we are unaware of any plans BT has to undertake significant investments in new technologies for providing TI services. For example, as set out above, although BT has undertaken a limited roll out of its newer 21CN SDH transmission equipment, [✂].[269]

Provisional conclusion

7.68 We propose to set charges for TI services (terminating segments and over the core) by basing our estimates of costs and asset values on the technology that is currently used to deliver these services, without making any adjustments.

We propose adjustments to base year costs based on BT's 2013/14 RFS

7.69 Our starting position for determining the base year costs is BT's audited RFS for 2013/14. BT Wholesale has provided us with detailed disaggregation of costs from the RFS. They were the latest fully audited set of regulatory accounts available when we started the charge control modelling.

7.70 As set out in Section 4, we propose adjusting the cost data to ensure that they are representative of the relevant level of costs for forward looking charge control purposes.

7.71 We have scrutinised the base year data provided by BT. In Annex 7 we set out the criteria we used to identify potential adjustments to 2013/14 RFS cost data provided

[267] Paragraph 19.199, March 2013 BCMR Statement.
[268] Section 5 and Annex 10, May 2015 BCMR Consultation.
[269] Question 2 and 3, BT response to the 4th s135 notice dated 6 November 2014.

by BT. Having identified potential adjustments, we then set out in Annex 7 our analysis and justification for the following adjustments to the 2013/14 base year data:

- **Access cards:** We have removed Access card costs as they are not used currently to provide business connectivity services;
- **June 2015 Cost Attribution Review** - **Errors:** We have corrected for a number of mathematical, input and allocation errors that have been identified as part of the June 2015 Cost Attribution Review;
- **June 2015 Cost Attribution Review** – **General Overheads:** As part of the June 2015 Cost Attribution Review we consult on a proposal to break down General Overheads into smaller cost categories and attribute them using the underlying cost drivers. For the June 2015 BCMR Consultation, we attribute these General Overheads using PAC;
- **Regulatory Asset Value adjustment:** Consistent with other charge controls, we have used the RAV for BT's Access Copper and Duct assets, rather than the CCA basis used in BT's RFS;
- **Cumulo:** BT's Cumulo rates costs are the non-domestic rating costs it pays on its rateable network assets. We have adjusted the allocation of BT's Cumulo rate costs and we have also removed the effect of refunds on payments prior to 2013/14 from the 2013/14 costs;
- **Restructuring costs:** We have excluded the costs relating to one-off restructuring charges;
- **Credit notes:** We have removed a miss posting of a PPC rebate payable to CPs in relation to SLG payments;[270] and
- **TI volumes:** We have amended a miscounting of TI volumes BT discovered in the 2013/14 RFS.

7.72 Table 7.2 below presents a summary of the impact of our adjustments on the reported 2013/14 data.

Table 7.2: Summary of adjustments made to TI base year costs

Adjustment	TI FAC Impact (£'m)
13/14 RFS Total	338.1
Access cards	(0.2)
June 2015 Cost Attribution Review - Errors	(18.2)
June 2015 Cost Attribution Review - General Overheads	(13.5)
RAV	(2.4)
Cumulo	11.4

[270] Payments to CPs for PPC rebates which should have been a debit to income but were instead posted as debit to SLGs.

Restructuring Costs	(4.5)
Credit Notes	(2.0)
TI Volumes	(8.5)
13/14 Revised Total	300.3

Source: Ofcom

Stage 3: Forecast costs for the duration of the charge control

7.73 Having modelled the relevant base year costs under Stage 2, we forecast, from this starting point, how costs are likely to change over the duration of the proposed charge control. In the paragraphs below we summarise our proposals in relation to volume and efficiency changes given that they are specific to TI services.

7.74 Our proposed approach in relation to AVEs and CVEs, input price inflation changes and the cost of capital for TI services are discussed in Section 5 and Annexes 8 and 9.

We propose to forecast continued TI volume decline until 2018/19

7.75 BT's TI services consist of a number of different products, e.g. PPCs, RBS, infrastructure etc., bandwidths and charging elements, e.g. local ends, distribution/transmission, links and elements currently known as regional trunk. Our 2015 LLCC Model requires forecasts for each product and element, including those we do not directly charge control, e.g. services above 8Mbit/s. This is because the costs for controlled services may also depend on the demand for non-controlled services due to the presence of economies of scale and scope in the provision of leased lines.

7.76 We have gathered volume forecasts for the charge control period from BT as well as OCPs and an industry analyst. The trends all forecast continued decline up to 2018/19, with some variation in relation to the speed of decline over the period. On balance, we consider that it is reasonable to primarily use BT's forecasts (further details are provided in Annex 8).

7.77 As we discuss in the May 2015 BCMR Consultation, we expect there will be three main drivers of the declining volumes in the TI market over the next charge control period:

- BT has signalled to end-users that it is ending support for the PDH platform that supports sub-2Mbit/s services due to obsolescence of the equipment;
- a large number of TI users are increasing their bandwidths above 10Mbit/s or higher, where Ethernet is the cheaper technology; and
- the availability of NGA broadband and EFM services to support higher upload and download speeds using Wholesale Local Access remedies (i.e. LLU and VULA) continues to increase.[271]

7.78 As a consequence, many, though not all, customers are expected to migrate from TI to higher bandwidth services delivered using Ethernet, including EFM, and other

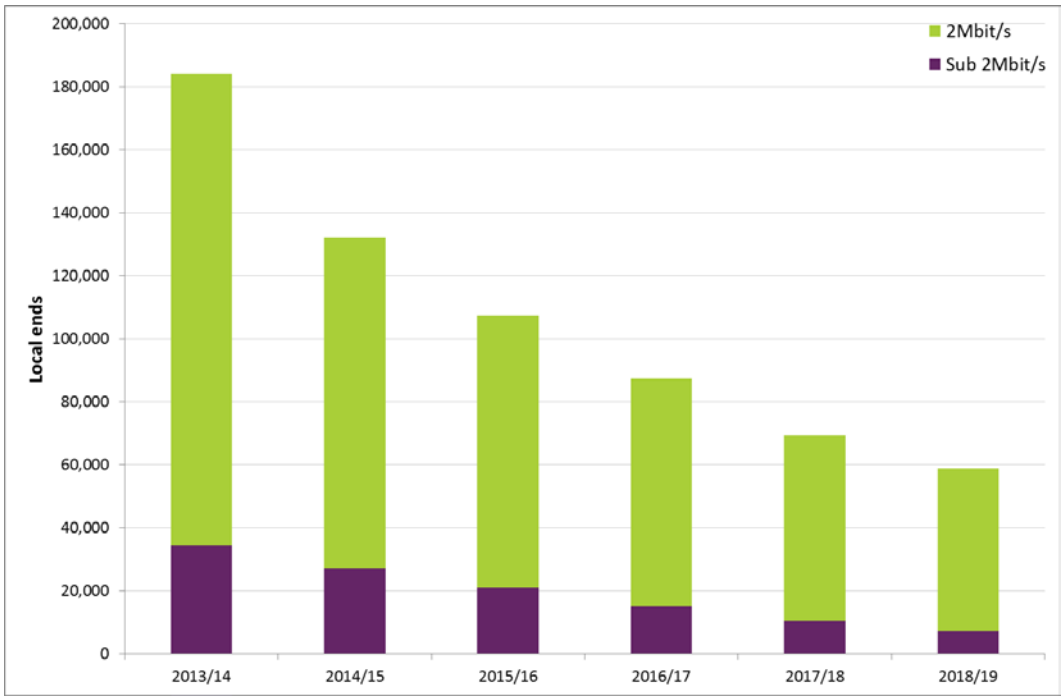
[271] Paragraph 5.20, May 2015 BCMR Consultation.

technologies, with the Ethernet forecasts supporting this view of growth in high bandwidth services over the next charge control period.

7.79 However, it is likely a significant proportion of customers will remain on TI services over the charge control period, particularly those with large legacy networks and/or specialised requirements as there are likely to be significant switching costs involved.[272]

7.80 By the end of this charge control, we forecast the total number of TI circuits to decline by around [✂] per annum as shown in Figure 7.2 below. Further details on our volume forecasting analysis for TI services is in Annex 8.

Figure 7.2 Ofcom forecast of low bandwidth TI services to 2018/19 (number of ends)

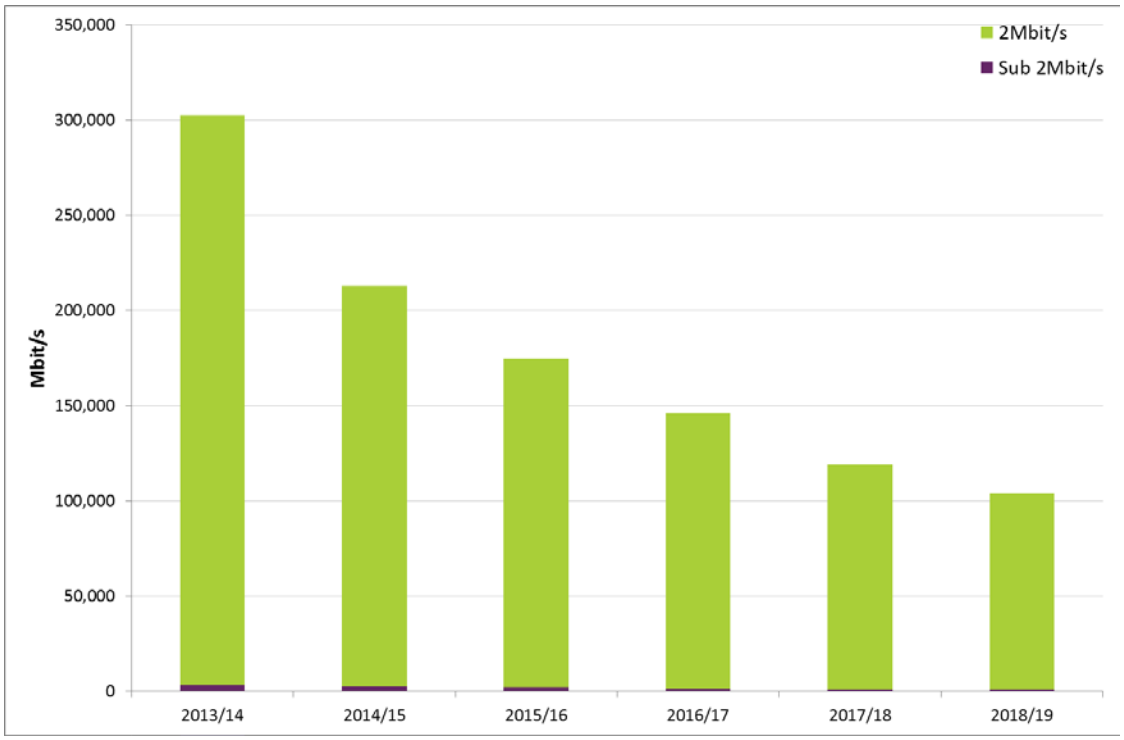


Source: Ofcom forecasts

7.81 We have also used our volume forecasts to derive a forecast of the capacity BT will deliver over low bandwidth TI services in the period to 2018/19. By multiplying the circuit volumes by the relevant bandwidths, we forecast that the capacity delivered over the TI network will decline rapidly from 2013/14 to 2014/15 but more slowly thereafter. This is shown in Figure 7.3 below.

[272] Paragraphs 5.13–5.21 and Annex 10, May 2015 BCMR Consultation.

Figure 7.3 Ofcom's forecast of low bandwidth TI service capacity



Source: Ofcom forecasts

We propose an efficiency assumption of 4% to 7% for TI services

7.82 In calculating the appropriate value of X for the charge control, we take into account an assumed efficiency gain that we expect BT to be able to achieve over the period of our proposed charge control.

7.83 Assessing efficiency requires a degree of regulatory judgement. Our analysis is heavily dependent on the available evidence. For this charge control we have analysed several different sources of data, each of which have their own advantages and disadvantages. We have used the same evidence when assessing efficiency improvements for both Ethernet and TI services, though we have assessed the impact for each set of services separately.

7.84 Our proposal is to adopt an efficiency assumption of between 4-7% with a central estimate of 5% for both Ethernet and TI services. Within the 2015 LLCC Model we apply this rate to both operating costs and capital expenditure.

7.85 We set out our assessment of efficiency in Annex 8.

Stage 4: Consider whether to make starting charge adjustments

7.86 In Section 4, we set out the principles under which we would consider making starting charge adjustments. In particular, we propose to apply the following principles in relation to starting charge adjustments:

- distorted pricing signals - we propose to compare BT's aggregate service charges to their costs using 2016/17 forecast data. If charges are significantly above DSAC (or possibly FAC) or below DLRIC, we propose to consider a starting charge adjustment; and

- excessively high or low margins driven by:
    - efficiency and volume changes – we propose to impose a glide path;
    - changes in cost allocations (and accounting errors) between regulated markets – we propose to impose a glide path;
    - changes in cost allocations (and accounting errors) between regulated and unregulated markets – we propose to impose a starting charge adjustment; and
    - changes in modelling approach – we propose to impose a glide path.

7.87 We now discuss the application of these principles in relation to the TI basket.

Distorted Pricing Signals

7.88 We have compared BT's charges for each TI service in aggregate[273] and compared these to our forecasts of DSAC, DLRIC and FAC in the first year of the next control (2016/17).[274] Our analysis indicates that no TI services in our basket will be priced above DSAC or double FAC when considered in aggregate.[275]

7.89 Our analysis also shows that some services are priced slightly below DLRIC when considered in aggregate, notably 2Mbit/s PPCs in the Central London Zone. As discussed in Section 4, we do not intend to make any starting charge adjustments to TI services that are priced below DLRIC. This is because we do not expect entry into a declining market, meaning that any concerns around anti-competitive pricing that may deter entry are unlikely to materialise.

Cost attribution

7.90 As set out in Section 4, we consider it is appropriate to make a starting charge adjustment where we find that costs which are incremental to unregulated services have been allocated to regulated business connectivity services (and vice versa). This may be due to an inappropriate attribution methodology or it may be due to an accounting error.

7.91 We have identified four broad areas where we consider this to have affected services in the TI basket.[276] Below we apply the framework set out in Section 4 and present the starting charge adjustments we consider are appropriate. Further details of the adjustments are provided in Annex 7.

[273] For example, in the case of a PPC 2Mbit/s circuit outside the CLZ we consider the total cost of purchasing the service over three years, including the connection, local end, link, distribution and regional trunk charges.
[274] A more detailed explanation of how we have done this analysis is provided in Annex 6.
[275] There are some individual charges that are forecast to be above DSAC and double FAC, namely PPC link charges for 64kbit/s and 2Mbit/s services and 2Mbit/s PPC local ends delivered using copper. However, as discussed in Section 4, we do not consider individual services when deciding whether or not to make a starting charge adjustment.
[276] The TI starting charge adjustment is also affected by the removal of Access card costs from all business connectivity services (as they are not used to provide Ethernet or TI services). However, as shown in Annex 7, the impact of this adjustment is very small for TI at £0.2 million.

Changes in cost attribution by BT

7.92 The changes that BT made in its cost attribution methodology in 2013/14, discussed for Ethernet in Section 6, are also applicable to TI as it resulted in a transfer of more than £5 million of costs from low bandwidth TI markets to unregulated wholesale markets.[277] Given that BT has identified more appropriate cost drivers in this case, i.e. they are more consistent with the principles of objectivity and causality, we believe that these costs are incremental to unregulated services and so should not previously have been attributed to TI services.[278] We therefore propose to include these in our starting charge adjustment.

Changes in cost attribution proposed in the June 2015 Cost Attribution Review

7.93 As explained in Section 6, BT has allocated a significant amount of corporate costs and TSO support function costs to regulated services that we do not consider to be appropriate because the manner in which the costs are allocated does not follow the principals of Causality and Objectivity.

7.94 We therefore apply the same analysis as we do for Ethernet by identifying corporate costs and TSO support function costs with a specific cost driver (see Tables 6.4 and 6.5 in Section 6). Adjusting for the corporate costs and TSO support costs where we have identified a single cost driver results in the removal of just over £8 million of costs from low bandwidth TI services in the base year, which we consider to be incremental to unregulated services. We therefore propose to include these in our starting charge adjustment.

Accounting errors

7.95 In addition to identifying more appropriate cost drivers for corporate costs and TSO support function costs, the June 2015 Cost Attribution Review has also identified a number of errors in BT's accounting treatment of wholesale leased line costs, specifically:

- the allocation of core and backhaul fibre (Fibre Bandwidth & Length);
- access fibre allocation (Number of Fibres Used);
- core backhaul/duct allocation to 21CN (Direct Allocation);
- BT Wholesale overheads (Transfer Charges); and
- other errors.

7.96 The analysis undertaken as part of the June 2015 Cost Attribution Review shows that two of these errors resulted in BT attributing a significant amount of unregulated service costs to TI services. These relate to BT not attributing any core or backhaul duct to BT's 21 CN network, resulting in some core and backhaul duct costs associated with BT's 21CN network being allocated to TI products, and BT's

[277] See 2013/14 BT Report requested by Ofcom.
[278] As discussed in Section 4, this is distinct from costs that would be regarded as 'common', for which there is no singularly correct way to apportion.

treatment of certain BT Wholesale overheads in its cost allocation system.[279] Correcting for these two errors results in around £10 million being reallocated from TI services to unregulated services in our base year.

7.97 In addition, as discussed in Annex 7, BT Wholesale recently identified a miscounting of volumes in the 2013/14 RFS. This resulted in costs that are incremental to an unregulated service (Featurenet) being attributed to TI services. The impact of correcting for this error is to reduce costs by around £8 million in our base year. As these costs are reattributed to unregulated services, we believe it is appropriate to include them in a starting charge adjustment in order to remove any competitive distortion.

We propose a starting charge adjustment of -7.75% for the TI basket

7.98 We have calculated the starting charge adjustment using the same methodology as in the Ethernet basket (see Section 6). We forecast total basket costs in 2016/17 taking into account all adjustments and we forecast costs excluding the above adjustments; the percentage difference between the two represents our starting charge adjustment.

7.99 Applying this methodology to the TI basket results in a starting charge adjustment of -7.75%, which BT will be required to make on the first day of the charge control (i.e. on 1 April 2016). As with the Ethernet starting charge adjustment, and consistent with our decision to design a broad basket, we propose to provide BT with flexibility to implement this starting charge adjustments and vary its price reductions by service, subject to our proposed sub-basket and sub-cap constraints, so long as the weighted reduction is equal to 7.75%. The adjustment will use the same revenue weights that are used to comply with the first year of the charge control.

7.100 However, in order to ensure consistency between our sub-baskets and the starting charge adjustment, we also propose that 2Mbit/s RBS, NetStream and SiteConnect services should be reduced by at least 7.75% at the start of the control period. Without this constraint, BT may implement the starting charge adjustment in a way that benefits PPC customers rather than RBS customers. Similarly, our proposal for a CPI-CPI sub-cap on all charges will also apply to the starting charge adjustment such that, when implementing the latter, BT will not be able to increase any charge in nominal terms.

Stage 5: Calculate the value of X and our proposed basket(s) of services

7.101 On the basis of the inputs and assumptions set out above, we have forecast the costs of services in the TI basket for each year of the charge control. We have forecast revenues in the absence of a charge control using 2015/16 prices and volume forecasts for the charge control period. We have calculated the X values so as to bring forecast revenues in line with forecast costs by the final year of the charge control (2018/19).[280] Based on the proposals outlined in this Section, our proposed base case value of X for the TI basket is -12.25%.

[279] A number of transfer charges that related to unregulated products sold by BT Wholesale were treated as general overhead and so allocated to both regulated and unregulated products.
[280] When calculating revenues and costs in 2018/19, we do so in real terms using 2015/16 prices.

7.102 We note that the X for the TI basket is significantly different from that adopted in the March 2013 BCMR Statement (i.e. +2.25%). Given that demand for TI services is in decline, this might typically imply a positive X, all else being equal, as unit costs might typically be expected to rise where volumes are in decline and the firm incurs fixed costs in providing the regulated services. However, in this case there are two factors that are significant drivers of the negative X:

- **BT's returns at the start of the control period** – as explained in Annex 5, BT's returns in TI markets were significantly in excess of its cost of capital in 2013/14. Although we forecast the returns to fall over the 2013 LLCC period, we expect them to remain over 30% at the start of the 2016 LLCC period. Therefore we forecast there to be a significant gap between revenues and costs to be closed over the 2016 LLCC period; and

- **efficiency** – as set out in Annex 8, we are proposing an efficiency target for TI of 5% per annum for both operating expenditure and capital expenditure. We would expect efficiency improvements over time to offset, to some extent, increases in unit costs from loss of scale.

7.103 If these two factors did not apply, i.e. BT's returns were commensurate with its WACC at the start of the 2016 LLCC and no efficiency improvements were assumed, then the TI X would be positive (around +4.50%) consistent with what we might expect in a declining market.

7.104 Similar to the Ethernet control, we consider that attempts to model the potential impacts of alternative input parameters are unlikely to provide useful information for the purposes of setting ranges. In the case of the TI basket, we consider that the most significant impacts that could cause us to depart from our base case X in the 2016 BCMR Statement, in addition to the standard modelling inputs and approach risks, relate to updating the base year financial data for BT's 2015 RFS and making appropriate adjustments to this data. Furthermore, we have also taken into account that the proposed X for the TI basket is significantly different from that adopted previously and that the TI market is declining. On this basis, we consider that the X may be more likely to become less negative relative to our base case than more negative. Therefore, we propose a control of CPI-12.25% for the TI basket as the base case, with a range of CPI-6.25 to CPI-14.25%.

7.105 In Annex 6, we have performed a sensitivity analysis on the key inputs and assumptions used for the cost forecasting of TI services. The purpose of the sensitivity analysis is to provide an indication of how sensitive the modelled X is to changes in the key input parameters.

Consultation questions

Question 7.1: Do you agree with our basket design proposals for TI services, including the need for sub-caps and/or sub-baskets? If not, what alternative would you propose and why?

Question 7.2: Do you agree with our approach to deriving our base year costs for TI services, including in particular:

a. *our proposal in relation to the technology assumed for supplying controlled TI services for modelling purposes; and*
b. *our proposed cost adjustments to BT's 2013/14 RFS to form the base year costs?*

If not, what alternative would you propose and why?.

Question 7.3: Do you agree with our approach to forecasting costs and revenues over the period of the charge control in relation to TI services, including in particular:

a. *our volume forecasting assumptions; and*
b. *our efficiency forecasting assumptions?*

If not, what alternative would you propose and why?

Question 7.4: Do you agree with our proposals in relation to starting charge adjustments for TI services? If not, what alternative would you propose and why?

Question 7.5: Do you agree with our proposals in relation to the value of X for TI services. If not, what alternative would you propose and why?

Section 8

Dark fibre pricing

Introduction

8.1 In the May 2015 BCMR Consultation[281] we explained why we consider that our proposed dark fibre remedy should include a charge control. In particular, we said that we are concerned that BT could charge excessive prices for dark fibre, which would deter its take up, and lead to a distortion in downstream competition as the relative pricing of active and passive remedies would be a key driver of how and where passive remedies are used.

8.2 We also set out in the May 2015 BCMR Consultation our proposals in relation to the design and pricing of dark fibre.[282] We proposed an 'active-minus' approach, implemented by subtracting the cost of the active components of the reference product(s) at a high bandwidth (1Gbit/s), as we considered that this would provide the best balance of potential costs and benefits of dark fibre and, in particular, would reduce potential for a range of negative impacts. We proposed that:

- the EAD 1Gbit/s products are the appropriate benchmark for pricing dark fibre; and
- both EAD and EAD-LA dark fibre circuits should be available to match the corresponding active product offering.

8.3 We considered that an 'active-minus' approach to pricing the dark fibre products, using the EAD 1Gbit/s products as a benchmark, would reduce the regulatory arbitrage opportunities which could otherwise occur given the existing active pricing structure.[283] Similarly, using a reference active product would limit the scope of arbitrage opportunities by maintaining a link between the passive access price and the contribution to fixed and common costs built into the active price structure. We explained that this option would involve using the active products to set a wholesale dark fibre price which would apply irrespective of the downstream service it was used to provide.

8.4 We also proposed to provide guidance on how we would calculate the value of the 'minus' at any given time, rather than to specify this upfront. We considered that this would give BT time to assess in detail the specific equipment and activity costs that would be avoided when it provides a passive service, and would also allow the access charge to be more flexible, e.g. allowing the price to adjust to possible product design changes.

[281] See Section 7, Section 9 and Annex 26, May 2015 BCMR Consultation, for more detail in relation to our proposals on dark fibre.
[282] More specifically, we have considered a cost-based approach and a value based ('active-minus') approach. We identified three ways in which an 'active minus' approach could be implemented: on each product individually, on a basket of active products and on a single reference product.
[283] Arbitrage opportunities could arise because the active pricing structure includes a bandwidth gradient, where higher bandwidth products contribute more to common cost recovery than lower bandwidth products. Although passive products can be used to deliver any bandwidth, by using a high bandwidth reference product for the passive price, a bandwidth gradient in active products can be maintained.

8.5 Below we set out and explain our proposals concerning the form of the price control condition to implement the 'active-minus' pricing approach for Dark Fibre Services. In particular we propose a 'basis of charges' condition requiring BT to price the Dark Fibre Services by reference to corresponding active products less the relevant LRIC of the active elements of those products which BT will avoid by providing the Dark Fibre Services.

8.6 This consultation also contains our specific proposals for our guidance on how the 'minus' – the differential between the active benchmark and dark fibre price - should be calculated, including the basis for calculating the 'minus' and the specific active elements that should be included in that calculation. We also consider a number of other issues related to the interactions between the final design and pricing of the dark fibre product.

'Basis of charges' condition

8.7 In light of our considerations in the May 2015 BCMR Consultation, as summarised above, we propose that the most appropriate form of price control to implement the proposed 'active-minus' pricing approach would be a 'basis of charges' condition specifying that BT should derive prices for Dark Fibre Services from the prices for reference Ethernet services (1Gbit/s EAD and 1Gbit/s EAD Local Access), with the prices reduced to reflect the long-run incremental costs that are avoided by BT when providing that Dark Fibre Service instead of the corresponding 1Gbit/s EAD or 1Gbit/s EAD LA service, as appropriate. We refer to the difference between the price for Dark Fibre Services and the reference EAD services as the 'active differential'.

8.8 Below we consider how the active differential should be assessed, taking into account productive efficiency, allocative efficiency and dynamic efficiency considerations. The main issue we consider is whether to propose a LRIC or LRIC+ cost standard when calculating the appropriate differential.[284]

8.9 When making this assessment, we consider that the relevant increment being considered is a material negative increment in the volume of active circuits sold due to the sale of dark fibre service, when compared with the likely situation absent the imposition of a dark fibre remedy. Note that we do not consider that the relevant increment at this point includes the possibility of active service provision falling to zero, meaning the exiting of the active business. LRIC in this context therefore measures the active service costs that BT is likely to avoid incurring in the long run as a result of providing dark fibre.

8.10 Furthermore when making this assessment we note that our Dark Fibre Access remedy is intended to provide the opportunity for CPs to purchase a dark fibre input to create their own active leased line solutions. Our policy intention is for this to happen when it is efficient for CPs to provide their own alternative solution. This should be either when the CP wishes to employ different active components, to those provided by BT, to provide the preferred customer solution, or when the CP is able to provide an equivalent service at lower cost than BT.

[284] Given our proposal to use a LRIC standard, we have not further considered how any additional mark-up to form a 'LRIC+' approach would be calculated.

Regulatory consistency

8.11 Dynamic efficiency can be promoted via regulatory consistency, providing both BT and access seeking CPs with increased certainty as to the approach likely to be taken in a particular type of case. In the June 2014 FAMR Statement, Ofcom chose to set differences between charges for substitute inputs at LRIC. In coming to that decision we noted that we would in general depart from this approach by setting a larger differential to favour the upstream service only where this is justified by the need to promote upstream competition.[285] Both dark fibre and active products can be used to provide the same services to end users, so we consider that a similar approach may be justified here. For the reasons outlined below, in particular the existence of relatively large and small CPs already supplying active equipment, we do not consider it necessary to depart from this principle by setting a differential that would actively assist entry.

Productive efficiency

8.12 We consider it important to incentivise CPs to make efficient choices between active services and dark fibre, so as to maximise productive efficiency. We propose that this would be best achieved by requiring that the differential in charges between these products reflect those costs that BT avoids in the long run by providing a dark fibre rather than an active product i.e. the LRIC of the 'active' elements. A differential above this level may incentivise inefficient entry, i.e. downstream CPs using the dark fibre input even though their incremental active costs are greater than those of BT. A differential below LRIC may prevent downstream firms that are at least as efficient as BT from making an efficient choice to purchase the dark fibre input.

Allocative efficiency

8.13 We consider that allocative efficiency considerations are less important than productive and dynamic efficiency considerations when setting the active minus differential. In forming this view, we note that increasing the active differential, by using LRIC+ rather than LRIC, would result in a lower dark fibre price (an increased differential between the active price, and the dark fibre input price then calculated). While this might have benefits in terms of a lower dark fibre price, the reduced differential on the dark fibre product would mean that BT would recover less of its common costs from the dark fibre product, and these would need to be recovered elsewhere by BT. This suggests that overall allocative efficiency impacts would be small, and might be positive or negative. In any case, the overall impact on allocative efficiency would be difficult to estimate.[286] For these reasons, we have not given allocative efficiency considerations significant weight when forming a view on the best approach to calculating the active differential.

Dynamic efficiency

8.14 We consider that the introduction of a dark fibre remedy would improve dynamic efficiency, by giving increased scope for innovation.[287] In addition, dynamic efficiency can be enhanced by increased competition. As a result, in some cases Ofcom actively seeks to promote entry when setting access charges. This may include

[285] Paragraphs 3.77–3.108, Volume 2, June 2014 FAMR Statement.
[286] We note that if the net effect was to increase the price of low bandwidth services where customers might be most price sensitive, then this would favour a LRIC approach over LRIC+, because BT would need to make (slightly) smaller adjustments to rebalance its active price structure.
[287] Annex 27, May 2015 BCMR Consultation.

considering whether it is appropriate to allow for an increased differential while downstream competitors become established and develop economies of scale. For example, in the case of LLU-based competition, Ofcom considered it worth promoting this type of competition and we took actions during the early years to help the establishment of LLU operators. The resulting price differential between active and passive access products is likely to have exceeded the differences between their respective LRICs. In this section, we consider whether it is appropriate to take a similar approach.

8.15 In this case we consider that it is not necessary for us to increase the differential between active and dark fibre charges to promote entry into the active layer of leased line services. We consider that the use of a dark fibre remedy is unlikely to involve significant economies of scale, beyond those associated with the provision of active services. In particular, as explained in our analysis of the cost savings associated with removing duplication of active equipment, in many cases CPs are already supplying their own active elements (so the 'minus' component will be a simple cost saving, rather than needing to compensate for purchasing electronic equipment).[288] Consequently, there is little additional investment required so there is no obvious need to increase the differential to allow CPs to achieve an efficient scale of operation.

8.16 Moreover, we would expect to see dark fibre used where it offers additional benefits, such as innovation, beyond those available using active products alone. This would be achieved by a pricing differential based on LRIC. Increasing the differential beyond this amount may lead to dark fibre being used in situations where it does not offer additional innovation benefits, and instead is used because of arbitrage between the active and dark fibre wholesale products. We do not therefore consider that such an increased differential is likely to improve dynamic efficiency.

8.17 In light of the above, we do not consider that there is a *prima facie* case for intentionally favouring competition based on dark fibre over that based on BT active products, or *vice versa*. In particular, we consider that both productive and dynamic efficiency point to pricing being set to reflect LRIC differentials.

Risk of underestimating the LRIC differential

8.18 We considered whether we should set a differential based on LRIC+ on the grounds that if there is any error in the estimation of LRIC, the harm from setting the differential lower than the LRIC differential would be greater than the harm of setting differentials above LRIC. This could be because if the differential is too low then even efficient CPs will find it uneconomic to use dark fibre, whereas if the differential is (slightly) too high, the harm from inefficient entry is likely to be very limited.

8.19 We acknowledge that, at least in theory, calculation errors may result in a differential that is below the 'true' LRIC of the active elements. However we do not think this is a major risk in this case. The major active cost components are relatively clearly identified in BT's regulatory accounts, so the risk of a major underestimate of the active LRIC appears quite limited. Moreover, our proposal to provide guidance as to how BT should calculate the differential, rather than specifying the differential upfront, will reduce the risk of forecast error.

8.20 More fundamentally, our policy objective is to allow CPs to benefit from the potential to differentiate their active offerings. If there are genuine benefits to consumers from

[288] Annex 23, May 2015 BCMR Consultation.

this differentiation, then dark fibre may still be adopted to the extent that these benefits exceed any slight underestimation of the LRIC of the active elements. We also note that the dark fibre product is benchmarked for the purposes of pricing to the BT EAD 1Gbit/s service,[289] but the objective is not to exactly replicate that product. In practice, a 1Gbit/s active product allows the user to consume up to a maximum of 1Gbit/s of capacity. A dark fibre however may be used to carry considerably more bandwidth than this. So again, the precise calculation of the differential, in terms of potentially undermining the LRIC of the active elements, should not be critical to the economics of dark fibre use in most applications.

8.21 In light of the above, we do not think a LRIC+ differential is needed to avoid the possible risks of underestimating the LRIC differential.

Conclusion

8.22 As set out above, we do not consider it is necessary or desirable to set charges to promote dark fibre over other forms of access in the leased line market. This means that to promote efficiency, the relative charges of the active benchmark and the dark fibre products should reflect those costs which BT avoids in the long run by providing dark fibre rather than the active product. We therefore propose that the active differential between the active benchmark and the dark fibre products should be set at LRIC.

Proposed condition

8.23 In light of the above discussion we propose to impose a basis of charges condition requiring BT to ensure that charges for Dark Fibre Services are set by reference to charges for the reference Ethernet products, namely 1Gbit/s EAD and 1Gbit/s EAD LA, adjusted to reflect the difference in costs. The dark fibre price should be reduced to reflect the costs avoided by BT when providing that Dark Fibre Service instead of a corresponding 1Gbit/s EAD or 1Gbit/s EAD LA service, as appropriate. In addition, the dark fibre price should reflect the long-run incremental costs of any objectively justifiable differences between that Dark Fibre Service and the corresponding 1Gbit/s EAD or 1Gbit/s EAD LA. This condition would apply to both connection and rental charges.

8.24 We also propose that where the Dark Fibre Service is based on access to more than one optical fibre, BT must additionally ensure that charges do not exceed an amount calculated by multiplying the charge for a corresponding single fibre 1Gbit/s EAD service or 1Gbit/s EAD LA service by the number of optical fibres, adjusted to reflect any incremental cost savings of providing network access to more than one optical fibre at the same time.

8.25 The differential in long-run incremental costs may change over time. Compliance with the condition could in principle be assessed based on either current period costs, or on prior period costs. Compliance on the basis of current period costs would have the benefit of being related to the actual differential at that period in time. However, it has the major drawback that, to the extent that some costs vary with actual volumes, the true level of LRIC may not become known until after the end of the period. This may mean that BT could inadvertently not comply due solely to forecast error. For this reason, we propose that compliance should be assessed based on cost data that is available to BT at the point at which it sets its charges. As with the cost data for Ethernet services in the main charge control, we believe that this should be the year

[289] In both local ('LA') and non-local variants.

to end December, prior to the charge control year, as this would be the latest cost data available to BT when it sets its charges.

Proposed Guidance

8.26 Having proposed above that the dark fibre price should be set on the basis of BT's EAD 1Gbit/s products, minus the LRIC of the active elements, we now move on to provide guidance on how BT should calculate the active differential. As set out in Section 9 of the May 2015 BCMR Consultation, we propose to provide guidance rather than to specify the differential upfront, as this would give BT time to assess in detail the specific equipment and activity costs that are avoided when it provides a dark fibre rather than an active service, and ensure that the dark fibre product is designed to best meet industry needs. Moreover, guidance would allow the access charge to be more flexible, particularly if the dark fibre product design requires adjustment to best meet industry needs.

8.27 We propose to provide guidance on how we would anticipate calculating the active differential, if we were to receive a dispute in relation to the proposed SMP condition. The proposed guidance sets out how we would anticipate approaching the issue based on the information we currently have, but we may take a different approach if it is appropriate to do so in the specific circumstances of the dispute. In such cases, we would explain any apparent departure from the guidance.

8.28 We explain below our proposed guidance along with our reasoning. We also set out a draft of the proposed guidance at Annex 14.

What costs to include in the increment

8.29 In this section we consider which specific costs should be included in the active LRIC calculation. In order to do this, we have analysed the (super) component costs[290] provided in BT's RFS that were used to provide EAD services in 2013/14 to determine which costs would be avoided when BT provides dark fibre instead of its EAD 1Gbit/s services. As the RFS reports costs on an FAC basis, we have adjusted this to estimate the LRIC that BT would avoid by providing dark fibre services instead of the corresponding EAD 1Gbit/s service. We requested further information from BT; this included detailed descriptions of the equipment used by EAD services and the function within the network, clarification as to where particular cost items were recorded within BT's RFS, and detailed descriptions of EAD provision, repair and cessation processes.[291]

8.30 There were nine super-components that contributed costs to EAD 1Gbit/s services in 2013/14.[292] We have categorised these into two groups – those that relate to assets and those that relate to other operating costs. This categorisation into asset and operating costs is consistent with the approach we have taken in our 2015 LLCC Model.

[290] In its regulatory accounts BT reports the costs of services by what are called super-components. A super-component is a collection of network components, though many super-components consist of only one network component. BT describes a network component as constituting a discrete part of its network. A network component collects costs from various plant groups. See also BT's 2014 DAM pages 11 and 206.
[291] BT response to the 10th s135 request.
[292] See, for example, BT's 2014 DAM, p. 78.

- Asset based components. These are mainly associated with equipment and network infrastructure. Capital costs account for a high share >60% of overall costs for these components. The remaining costs are operating costs associated with running these assets on an ongoing basis, for example maintenance and property costs.

- Service support components. These cover the other operating costs required to provide EAD services. There are relatively few capital costs. Operating costs excluding depreciation account for over 97% of total costs for these components. These components generally cover front (sales) and back (support) office activities. For example costs include those for sales and marketing, order processing and fault handling. We have also classified Revenue Debtors as a service support component.[293]

8.31 Table 8.1 below shows the nine super components that contribute costs to EAD services within BT's 2014 RFS and how we have classified these as being asset based or service support related. It also indicates whether the relevant costs are attributed to rentals, connections, or both.

Table 8.1: Classification of Ethernet super-components

Super-Component	Asset/Service	Rentals	Connections
Wholesale and LAN extension services fibre	Asset	X	X
Ethernet Main links	Asset	X	
Ethernet Electronics	Asset	X	
Access cards (other services)	Asset	N/A	N/A
Service Centres (Provision)	Service		X
Routeing and Records	Service		X
Service Centres (Assurance)	Service	X	
Sales Product Management	Service	X	X
Revenue Debtors	Service	X	X

Source: BT's 2014 RFS and Ofcom. An 'X' indicates that the cost super-component contributes to the cost of either rental or connection charges.

[293] Revenue debtors are part of the working capital for a service. They are an estimate of the debts owed for each service based on BT's standard payment terms and assuming that the service is sold externally. See also BT's 2014 DAM p. 29. We have therefore classified this cost as a service support component as it is not directly linked to the costs of assets.

8.32 The guidance and indicative calculations contained in this section reflect the structure of the costs as reported in 2013/14. We note that there will be changes to this list of components in the future. For example, in the 2014/15 RFS, the Wholesale and LAN extension services fibre super-component will be divided into four super-components: Wholesale Extension Services Fibre, OR Systems and development – Ethernet, Ethernet Access Direct – Fibre, Other Ethernet rentals – CCTV.[294] In addition, there may be further changes prior to the introduction of any requirement for BT to offer dark fibre services and these may not be limited just to changes to components or super-components. We will aim to update this guidance in response to any changes in BT's reporting for 2014/15 should we proceed with the proposed dark fibre remedy in the 2016 BCMR Statement.

Asset based super-components

8.33 We have analysed the costs attributed to each of the four asset based components, to see whether these costs should be included in the active LRIC. For two of the super-components, Wholesale and LAN extension services fibre and Ethernet Main Links, we found no evidence of inclusion of any active-specific costs. The main costs within each of these super-components are duct and fibre required to provide Ethernet services. There are also some software development costs that we assume are required to support services using these assets.[295] We therefore consider that these costs are not likely to be relevant to the calculation of active incremental costs.

8.34 The Access Cards (Other services) super-component consists of two main components: Ethernet Switches (CN901) and High Band Customer Data cards (CN882). [296] We discuss why we have excluded the costs of the Access Cards (Other Services) super-component from the charge control model in Annex 7. Practically all of the equipment that forms the basis for the costs within this super-component are used by services downstream of EAD and are not used by EAD services. We do not expect the costs for this component to be attributed to EAD services from 2014/15. The costs for this super-component are therefore very unlikely to be relevant to the calculation of the active increment. BT has told us that these costs will be attributed to a new service to be reported within BT residual in 2014/15.[297]

8.35 The Ethernet electronics super-component appears to relate to costs associated with operating and maintaining active equipment, including the capital costs of that equipment. These costs appear to relate to the 'active' element of EAD services. We have therefore examined what proportion of the costs of this component should be included within the active LRIC.

8.36 The Ethernet electronics super-component includes the cost of the electronic equipment installed as part of EAD services. This equipment is variable on a per customer basis, and so should be included in the active LRIC. However, not all of the costs within this super-component will be part of the active LRIC. This super-component also contains attributions of costs for activities and assets that are shared with other services and would not be saved by BT in the long run should BT only

[294] Annex 10, p. 178, Ofcom, Directions for Regulatory Financial Reporting, Statement, 30 March 2015, http://stakeholders.ofcom.org.uk/binaries/consultations/financial-reporting/statement/statement.pdf (March 2015 Directions Statement).
[295] Ofcom analysis of Additional Financial Information Schedules AFI3 provided by BT as part of its regular financial reporting.
[296] See BT's 2014 DAM p. 242.
[297] BT's answers to questions B2 and B4 of the 10th s135 request and the discussion in Annex 7 - Base year costs and adjustments.

offer dark fibre services. Examples of these might be some general management costs, supplies and logistics costs and finance and billing costs. We would however expect most of the active equipment capital and depreciation costs to be included within the active LRIC.

8.37 We propose that the share of costs within the Ethernet Electronics super-component that fall within the active LRIC should be estimated by the LRIC to FAC ratio for this component using LRIC and FAC data from BT's LRIC model. This is consistent with the approach we have adopted in our modelling for this charge control to estimate how costs vary with volumes. We have used LRIC to FAC ratios as the basis for our CVE and AVEs.[298] We believe this ratio provides a reasonable estimate of the proportion of these costs that would be saved in the long run.

8.38 Our proposal is therefore that a share of Ethernet Electronic costs should be included in the active LRIC and that the share should be the ratio of LRIC to FAC costs as reported within BT's LRIC model.

Service support super-components

8.39 There are five super-components that contribute costs to EAD services which we have categorised as being 'service support'. These generally cover provisioning and cessation activities, maintenance processes and sales and marketing costs, including bad debt costs. We now analyse each of the super-components in turn.

'Service Centres (Provision)' and 'Routeing and Records'

8.40 Service Centres (Provision) super-component covers the costs of staff working in Openreach customer contact centres who deal with enquiries and complaints related to provision processes.[299] The Routeing and Records super-component covers the costs associated with the physical verification and initial recording of routings within the network.[300] We propose that the costs for these super-components are not included in the active LRIC for the reasons set our below.

8.41 BT provided us with details of the tasks within the provision processes for EAD and EAD LA, and where the associated costs are recorded within the RFS. This showed that:[301]

- many of the activities associated with the provision of active equipment appear to be separately identified and attributed within BT's RFS to the Ethernet Electronics component that we have discussed above;
- similarly many of the activities associated with the network build and provision of fibre also appear to be separately identified and attributed to the Wholesale and LAN extension services fibre super-component within BT's RFS;
- activities mapped to the Routeing and Records component appeared to be related to recording network details: there was no clearly identifiable activity that related solely to recording active equipment. The incremental costs of any such

[298] See the discussion of AVEs and CVEs in Annex 8 - Forecasting Assumptions.
[299] See for example the description of the DTNIK base on p. 58, BT's 2014 DAM.
[300] See for example the description of the PDTRAR base on p. 99, BT's 2014 DAM.
[301] Answers to BT's 10th s135 request.

activity are likely to be small and routing and records costs are in any case a small element of connection costs;[302]

- the costs of most of the remaining activities appear to have been attributed to 'Service Centres (Provision)'. Our analysis of these remaining activities against the process maps suggested that either they were associated with building the network and thus related to provision of fibre or they would need to be undertaken regardless of whether an active or dark fibre service was being provided. It therefore appeared that there are few, if any, costs of activities attributed to Service Centre (Provision) that would be saved were a dark fibre service to be provided instead on an active one. We therefore propose that these costs are not included in the active increment; and

- BT also provided us with details of the tasks within the cessation processes for EAD and EAD LA, and where the associated costs are recorded within the RFS. As in the case of provisioning, our analysis of the information provided showed that active incremental costs associated with cessation processes appear to be captured in the components identified that directly related to active electronics. In particular, 'recovery of equipment' costs are already allocated to active super-components. The cessation related admin costs are captured within 'Service Centres (Provision)' while the task of updating records is included in the 'Routeing and Records' component. As in the case of provisioning, it seems reasonable to treat these costs as largely related to the provision/cessation of fibre.

Service Centres (Assurance)

8.42 The Service Centres (Assurance) super-component covers the costs of staff working in Openreach customer contact centres who deal with enquiries and complaints relating to fault reporting and repairs. We propose that a proportion of these costs should be included in the active LRIC.

8.43 BT provided details of fault reporting and fault resolution processes for EAD and EAD LA services and where the associated costs were recorded within BT's RFS.[303] As in the case of the previous cost categories discussed above, this showed that a number of the tasks associated with maintenance and fault repair were directly attributed to the relevant active or passive asset based super-components already identified: Ethernet Electronics or Wholesale and LAN extension services fibre.

8.44 There were however more general activities, such as initial fault reporting and diagnosis, resolution design and closure and fault clearance and closure which were attributed to the Service Centre (Assurance) super-component. The costs of these activities are not split between those related to the faults related to active equipment as opposed to passive (dark fibre) infrastructure. However it seems likely that if BT were only to provide a dark fibre service it would have to handle fewer fault reports because it would not have to deal with faults associated with active equipment failures and because CPs would operate the network equipment and would therefore be able to take a bigger role in fault diagnosis

8.45 We therefore propose that the incremental active costs of Service Centres (Assurance) should be estimated from an analysis of fault volumes.

[302] See for example the costs by component on p. 78, BT's 2014/15 RFS.
[303] BT's responses to the 10th s135 request.

8.46 BT provided us with data that showed the number of faults for EAD and EAD LA circuits in 2013/14 broken down by fault type. Some fault types related to repair of fibre and some to repair of equipment however a large proportion c.50% were marked as "*fault not found*" or "*right when tested*". This data of course shows the results of the final fault diagnoses whereas we are interested in the reduction of faults if BT were only to provide a dark fibre service: these may not be highly correlated.

8.47 However in the absence of any further information, for the purposes of the estimates produced at the end of this chapter, we have assumed that fault volumes would reduce by the percentage of total faults that are equipment related. In 2013/14 this was around 22% for EAD Services and 21% of EAD LA services. For the estimates produced at the end of this chapter we have assumed that fault volumes would reduce by 25%.

'Sales Product Management' and 'Revenue Debtor' costs

8.48 The Sales Product Management (SPM) super-component covers the costs of staff who work in the SPM division of Openreach.[304] The Revenue Debtor super-component covers part of the working capital for a service. Revenue Debtor costs are an estimate of the debts owed for each service based on BT's standard payment terms and assuming that the service is sold externally.[305]

8.49 SPM costs do not appear to have been included within the activities discussed above covering installation, maintenance and cessation processes. These costs as recorded are not split between active and passive network components. However it is very likely that some product management costs are associated with active elements of services; for example, activities associated with choice of equipment and equipment manufacturer, specifying active functionality to be supplied, managing product change requests and so on. Similarly some sales costs are likely to be incremental to the sale of active services.

8.50 'Revenue debtors' costs similarly do not appear to have been included within the activities already discussed above, and as recorded are not split between active and passive network components. We would expect these costs to be largely driven by revenues and so would expect some incremental cost related to the value of the active element of the service.

8.51 In the absence of better data, we propose that the share of both the costs attributable to the active LRIC should be estimated based on the proportion of the overall EAD cost stack which relates to the active LRIC.

8.52 We note that both these cost categories account for a relatively small element of the cost stack of EAD and EAD LA services. SPM costs for example account for less than 1% of rentals costs and around 1.5% of connection costs. Revenue Debtors unit costs are of a very similar scale to SPM costs.

8.53 We propose that a share of both these cost categories is allocated to the active layer cost in proportion to the share of active incremental costs, excluding these super-components, relative to the overall EAD cost stack.

[304] See for example the description of the Except base BP on p. 33, BT's 2014 DAM.
[305] See for example BT's 2014 DAM p. 29.

Summary of proposed approach to attribution to active incremental costs

8.54 Table 8.2 below provides a summary of the proposals detailed above.

Table 8.2: Summary of proposals

Component	Proposed treatment
Wholesale and LAN extension services fibre	No contribution to incremental costs of active services
Ethernet Main links	No contribution to incremental costs of active services
Ethernet Electronics	Contributes to incremental costs of active services
Access cards (Other services)	Excluded : not relevant to EAD services
Service Centres (Provision)	No contribution to incremental costs of active services
Routeing and Records	No contribution to incremental costs of active services
Service Centres (Assurance)	Allocate share to active services using share of active fault volumes
Sales Product Management	Allocate share to active services using share of active incremental costs relative to EAD cost stack
Revenue Debtors	Allocate share to active services using share of active incremental costs relative to EAD cost stack

Source: Ofcom

Treatment of non-domestic rates

8.55 In addition to the super-components identified above, we consider that an appropriate attribution of BT's non-domestic rates bill should also be included in the active LRIC. This is based on the fact that, in relation to dark fibre, the rating authorities have determined that "*as a general rule of thumb, the person who lights the fibre is considered to be in rateable occupation*".[306] Under this precedent, if BT sells an active circuit to a CP, BT is liable for the associated rates, whereas if BT sells a dark fibre circuit then the purchasing CP is liable for the rates.

[306] Section 871, Valuation Office Agency (VOA), *VOA Rating Manual*, *Volume 5,* *http://manuals.voa.gov.uk/corporate/Publications/Manuals/RatingManual/RatingManualVolume5/sect871/toc.html#TopOfPage* (VOA Rating Manual).

Background on non-domestic rates and BT's cumulo rates costs

8.56 Business rates are a form of tax payable on non-domestic properties. BT pays non-domestic rates on its rateable network assets, as well as office buildings etc. Under rating law and precedent the rates on BT's rateable network assets are assessed together. The assessment of BT's rateable network assets is therefore called a 'cumulo' assessment. In what follows we refer to the costs of BT's non-domestic rates on its rateable network assets as being BT's cumulo rates costs.

8.57 BT's rateable network assets are defined by the Central Rating List Regulations.[307] The rateable assets within BT's cumulo assessment include most 'dark fibre' assets including: duct and manholes, copper and fibre, poles and cabinets as well as exchange buildings. Active network equipment such as routers, modems, and other pieces of electronic equipment are not rateable assets.

8.58 In broad terms a ratepayer's non-domestic rate costs are the result of multiplying a rateable value (RV) by a centrally set rate in the pound[308] that is the same for all ratepayers.[309] RVs are assessed by the rating authorities and reassessed at regular intervals. The next reassessment of RVs in England, Wales and Scotland will come into force from 1 April 2017.

8.59 In previous charge controls, including previous leased line charge controls, we have allowed BT to recover the appropriate share of BT's cumulo rates costs within its regulated prices; we consider non-domestic rates are legitimate business costs.

8.60 BT allocates its cumulo rates costs using a methodology called "*profit weight net replacement costs*" (PWNRCs).[310] We have, until charge control in the June 2014 FAMR Statement, accepted the results of this attribution as being a reasonable approach to the attribution of cumulo rates.[311]

8.61 In the June 2014 FAMR Statement however we said that we did "*not now consider that BT's 2011/12 allocation of cumulo costs to MPF and WLR services is reasonable*".[312] This related mainly to the treatment of rebates that BT had received.[313] Subsequently we have directed BT to change the way it attributes its cumulo rates costs.[314] In the charge control model for this consultation we have

[307] See for example: The Central Rating List (England) Regulations 2005 (SI 2005/551), as amended by The Central Rating List (Amendment) (England) Regulations 2006 (SI 2006/495) and The Central Rating List (Amendment) (England) Regulations 2008 (SI 2008/429) and the Central Rating Lists (Wales) Regulations 2005 (SI 2005/422). We understand that similar definitions also apply in Scotland and Northern Ireland.
[308] The rate in the pound is effectively a percentage. So for a Rateable Value of £100 and a rate in the pound of 50p in a particular year, the rating liability would be £50 (£100 x 50p/100p).
[309] For an introduction to how rates liabilities are calculated see: http://www.voa.gov.uk/corporate/Publications/businessRatesAnIntro.html
[310] For more details on BT's current allocation of its cumulo rates costs see the description of the CUMNORM and CUMRBTE bases on pages 53-55, BT's 2014 DAM.
[311] For more details on the Competition Commission discussion see Annex 14, paragraphs A14.16 to A14.20, Ofcom, Fixed access market reviews: Approach to setting LLU and WLR charge controls, Consultation, 11 July 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU_WLR_CC_2014.pdf (July 2013 FAMR CC Consultation).
[312] Paragraph A26.58, Annex 26, June 2014 FAMR Statement.
[313] For more details on our reasoning see for example paragraphs A26.53 to A26.58, Annex 26, June 2014 FAMR Statement.
[314] See for example paragraphs 4.63 to 4.67, March 2015 Directions Statement.

proposed to adjust the base data to be consistent with this direction. We provide more details of the adjustments we have made in Annex 7.

The non-domestic rates on fibre and duct are incremental costs of active services

8.62 As noted above, in relation to dark fibre the rating authorities have determined that "*as a general rule of thumb, the person who lights the fibre is considered to be in rateable occupation*". We consider that this has two implications in particular:

- it is the act of lighting a circuit and therefore providing an active service that causes the non-domestic rating liability to be incurred. This would suggest that non domestic rates should be considered part of the incremental costs of active services; and

- if BT were to provide a dark fibre service and another CP were then to light that fibre by placing its equipment on each end then it would be the CP who would be in rateable occupation of the dark fibre and thus responsible for the non-domestic rates and not BT.

Non domestic rates and the pricing of dark fibre – proposed approach

8.63 As non-domestic rates form part of the incremental costs of active services, they should be deducted when arriving at the dark fibre price. We therefore need to consider the appropriate amount of non-domestic rating costs to be removed.

8.64 In principle, the deduction could be based either on the likely cost to an access seeker or the likely incremental rate cost to BT. These may not necessarily be the same or easy to identify.

8.65 We note that currently the RV for fibre that has been lit may vary by access seeker. In particular, the RV for a particular fibre currently depends on a number of factors, including the number of fibres that are lit, the route length of the fibre and the total fibre route kilometres of the network the fibre is connected to.[315] This may result in different RVs and hence non domestic rate costs applying to different fibres and also to different operators.

8.66 Basing the reduction on the likely cost to an access seeker would have the advantage of making the access seeker indifferent between the active and dark fibre products – at least for EAD 1Gbit/s products; the differential allowed to the access seeker for rates costs would equal the actual cost of the access seeker. However we believe this advantage is outweighed by several disadvantages.

- this approach violates our general principle of using BT's active LRIC and not the costs of the access seeker, for the reasons noted earlier in this section;

- it risks setting a price for the dark fibre product that is below BT's cost of supply, and so may not give BT the opportunity to recover its efficiently incurred costs; and

- there are practical considerations: BT would need to monitor and verify the actual rates paid by the access seeker. This approach is therefore unlikely to produce a stable and predictable access price. That is compounded by two further points.

[315] Appendix 1.1 and 1.2, Section 871, *VOA Rating Manual*.

Firstly we understand that some of the rateable values that the Valuation Office Agency (VOA) has set for dark fibre for its 2010 list are still under appeal. Secondly there is uncertainty over what future RVs will be; initial new RVs for dark fibre will take effect from 1 April 2017.

8.67 Our view is that the disadvantages of basing the attribution on an access seeker's costs are significant and in particular it violates our general access pricing principles. We therefore do not propose that this method be employed.

8.68 Instead, we consider that the rates cost should be based on the incremental cumulo rates costs to BT. This will mean that BT will need to estimate the long-run incremental impact on its cumulo rates costs attributable to those leased line circuits that switch to dark fibre. This may not be straightforward, as it would in principle require BT to estimate the specific non-domestic rating costs for the circuits that switch to dark fibre. Such a degree of disaggregation has proved difficult in the past as BT's rates bill is a cumulo assessment and all its rateable assets are assessed together.

8.69 For the July 2013 FAMR Charge Control Consultation, we asked whether it was possible to disaggregate the rating model to identify the contributions to the RV by product. The VOA told us that "*the BT valuation model was created for the specific purpose of informing a rating valuation. It was not constructed in such a way as to allocate costs between different services or asset types. The VOA confirmed that the calculations were generally done at an aggregate level and did not consider a disaggregation of the existing valuation model by product is possible*".[316]

8.70 We note that the VOA's comments above applied to the valuation model developed to support BT's RV for the 2010 rating list. A new model is likely to be developed for the 2017 rating list and may be capable of disaggregation.[317] Alternative approaches may also be possible, for example: (a) estimating the contribution of active circuits to BT's rateable value to within a reasonable range; or (b) estimating the incremental cost as the attribution of BT's cumulo rating costs to active services within BT's regulatory accounts, specifically the attribution to EAD 1Gbit/s services.

8.71 Based on the current information we have, we anticipate that the active LRIC for non-domestic rates should be based on the attribution of BT's cumulo rating costs to EAD 1Gbit/s services.

Differences between the dark fibre RO and the benchmark EAD services

8.72 As stated in the May 2015 BCMR Consultation,[318] we anticipate that BT's dark fibre product offer would differ from EAD services in some respects. For example, there are likely to be differences in fault repair processes and potentially some new handover arrangements for the termination of dark fibre segments may be offered.

8.73 We recognise therefore that, while we envisage that dark fibre should replicate the existing arrangements in relation to the Ethernet services to the extent possible, there could be necessary and legitimate differences between active and dark fibre products. Differences in processes, systems or in the physical nature of the dark fibre

[316] Paragraph A14.27 onwards, Annex 14, July 2013 FAMR CC Consultation.
[317] It may also be that BT makes an appeal on its rateable value to reflect the take-up of dark fibre services. Any subsequent changes to BT's RV might then provide relevant evidence.
[318] Paragraphs 9.38, May 2015 BCMR Consultation.

infrastructure used to support the product may have legitimate impacts on the final dark fibre price.

8.74 Where differences between the active and dark fibre products arise, then we expect BT to identify these differences in the RO.[319] We propose that BT should adjust the access price for the dark fibre product to take account of the difference in incremental costs associated with the identified differences between the active and dark fibre products. We note that if BT were to introduce differences between the dark fibre and active products without an objective justification this may have implications in relation to its obligation not to unduly discriminate between its active and dark fibre product offers.

Provisioning, repair and migration charges

8.75 As stated in the May 2015 BCMR Consultation,[320] we consider that requirements for processes such as provisioning, repair and migration are best agreed by negotiation between CPs and BT as part of the implementation process. We would therefore expect arrangements for these processes to be specified in the RO. At this stage the exact terms of these requirements are unclear. However, we would expect any charges for these services, where applicable and to the extent that these are not part of the basic service, to be based on the long-run incremental costs of any differences between the active and dark fibre product. That is, to the extent that there is a corresponding charge for the EAD 1Gbit/s active service, we would expect that the corresponding charge for the dark fibre equivalent would be based on that charge, minus any costs avoided by not providing the active service.

8.76 We acknowledge that migration activities in particular related to dark fibre services may differ from those involved with the provision of active services. For example, they may involve the removal of equipment from an existing fibre without the need to install new equipment. While equivalent active service costs may not provide a readily usable benchmark for dark fibre migration charges, we consider that BT should set the charge for migration to reflect the long-run incremental costs of any objectively justifiable differences associated with migrating to dark fibre products rather than to active products.

New infrastructure and ECCs, TRCs and accommodation costs

8.77 We explained our proposals for new infrastructure provisioning, including ECCs, in the May 2015 BCMR Consultation.[321] In summary, we propose that the existing charging arrangements for (active) network extensions would provide the most suitable solution for the dark fibre service. In particular we noted that where construction of new infrastructure is required which is not specific to an individual customer, for example to increase capacity or to repair broken duct, we consider that the arrangements should not differ between active and dark fibre access. With regard to customer specific ECCs, as the ECCs relate to dark fibre costs only, we consider that the same ECCs should also apply to both active and dark fibre services.

8.78 Currently, BT exempts new EAD connections from the first £2,800 of ECCs, which are instead recovered by an increase in the connection charge for all new EAD connections (the balancing charge). We note BT's arguments that the average balancing charge per order may be inappropriate for dark fibre provisioning as it

[319] Paragraphs 9.113, May 2015 BCMR Consultation.
[320] Paragraphs A25.123-127, May 2015 BCMR Consultation.
[321] Paragraphs A25.115-119, May 2015 BCMR Consultation.

could lead to gaming of average cost based pricing structure where a CP could choose between self-build and dark fibre.[322] On this point, we do not think there is a substantial difference between the active and dark fibre remedies with respect to such arbitrage possibilities, given that competing CPs already face a similar trade-off between self-build and renting BT active circuits.

8.79 We therefore propose that if BT wishes to provide the same exemption from a specified value of ECCs, that the same value for dark fibre should be used as for active circuits. However, we note that the ECC exemption is at BT's discretion and that it is open to BT to withdraw the exemption at any time, or to limit which circuits the exemption applies to. If BT does withdraw the exemption, it would be required to reduce the connection charge by the applicable balancing charge.

8.80 We propose that for TRCs and accommodation costs, the proposed controls applied to active services and access arrangements for accommodation services should also apply for the dark fibre service.

Services requiring two fibres

8.81 We noted in the May 2015 BCMR Consultation that, depending on the specification of the service to be provided, leased lines may require one or two fibres. Therefore we also propose to require BT to include the option for one or two fibres as per CPs' requirements.[323] This will help ensure that CPs can obtain dark fibre circuits in configurations that are comparable to the current range of active services offered by Openreach.[324]

8.82 There are two potential approaches to pricing dark fibre for a single downstream service that requires two fibres. First, the fibres could be priced so that jointly the two dark fibres provide BT with a financial contribution equivalent to that of a single fibre. Using this approach, as the marginal cost of an additional fibre on the same route is low, the access price per fibre for a pair of fibres to be used jointly would be just over half of the 'EAD 1Gbit/s minus' access price for a single fibre. Any incremental costs BT incurred in providing a pair of fibres rather than a single fibre would be included in the total price of the two fibres.

8.83 This approach has the potential advantage of ensuring services requiring a pair of fibres can be supplied at a price that only reflects the incremental costs involved in the supply of the second fibre. This appears to be similar to how BT costs its own services that use two fibres.[325] Against this, it is unclear whether it would be either possible or desirable to monitor usage of dark fibre to ensure that pairs were in fact being used for a single downstream service. Indeed, it might be that this approach would result in access seeking operators in most cases seeking a pair of fibres. It could be argued that this would then mean the dark fibre service being provided, using a pair of fibres, would be significantly different from the, single fibre, EAD service being used to provide the access pricing benchmark, and therefore would be incompatible with the benchmark.

[322] BT non-confidential response to the November 2014 BCMR Passives Consultation, paragraph 7.26.
[323] Paragraph 9.39, May 2015 BCMR Consultation.
[324] Paragraph 9.7, May 2015 BCMR Consultation.
[325] We note however that the internal decision by BT on whether to use one or two fibres is BT's own choice, depending on the length of the circuit and nature of the service, so it is reasonable to assume BT will use two fibres only where it is more efficient to do so. In contrast, this pricing approach would make it the access seeking CPs choice.

8.84 The second option is for the pricing of two fibre services to be based on the pricing of a single fibre service. That is, the price of a single fibre would be doubled for the provision of two fibres. This initial price would then be adjusted for any incremental cost savings to BT associated with supplying multiple fibres. For example, for provisioning, we would expect the incremental cost of installing two fibres simultaneously to be similar to that of a single fibre, rather than twice the amount charged for a single fibre installation. The advantage of this approach is that it is consistent with our benchmark product, maintaining a similar level of contribution per fibre to that which BT receives from an EAD 1Gbit/s service. The disadvantage is that it makes two fibre services more expensive to supply using dark fibre, with the increased cost of a service requiring a pair of fibres not being directly related to the incremental cost of providing the second fibre.

8.85 We understand that the majority of EAD 1Gbit/s services use a single fibre, whereas some higher bandwidth OSA circuits are supplied using two fibres. By the time dark fibre is commercially available, we would anticipate that dark fibre would be viable for both 1Gbit/s Ethernet and WDM circuits, even under the second approach. Adopting the second approach therefore would still allow dark fibre to be commercially viable compared to the current active product set, preserving most of the benefits for innovation. Although the first option may be more consistent with current pricing, we consider that it risks leading to an inefficient use of fibre. In particular, there is a risk that most customers would order two fibres, even if they only required one in order to benefit from the pricing structure. This could result in arbitrage as CPs may use the two fibres to provide different active circuits, as opposed to using them for the same circuit. It may also result in inefficient use of assets as two fibres may be ordered even though only one is required to deliver the service. For these reasons, we propose that the pricing of a dual fibre circuit should be based on a single fibre service, adjusted for any incremental cost savings to BT from supplying multiple fibres.

Indicative calculation of the active incremental costs

8.86 For the purpose of this consultation, we have prepared an indicative calculation of the active LRIC costs that BT may avoid relative to its EAD 1Gbit/s service. These calculations are indicative only; it is likely that they will change as the dark fibre product is fully specified. Nonetheless, they provide a useful indication to stakeholders of the active differential they can expect when dark fibre is commercially available.

8.87 Our calculation is summarised in Table 8.3. The full details of this calculation are set out in Annex 6. This is based on non-WECLA data, and for the purposes of this indicative calculation we have used external costs only (for the reasons set out in Annex 6). We anticipate that the Local Access variant of the Dark Fibre product would have a rental charge approximately £750 lower than the EAD 1Gbit/s equivalent, and that the non-Local Access variant would have a rental charge of approximately £790 lower.

Table 8.3: Indicative calculation of 2018/19 active incremental costs

Active product	Total active incremental costs
EAD 1Gbit/s rental	789.89
EAD LA 1Gbit/s rental	752.83
EAD 1Gbit/s connection	7.95
EAD LA 1Gbit/s connection	2.56

Source: Ofcom

Legal tests

8.88 For the reasons set out above and in Section 9 of the May 2015 BCMR Consultation, we are satisfied that the proposed condition that requires charges for a Dark Fibre Service to be derived from the charge for the corresponding 1Gbit/s EAD Service or 1Gbit/s EAD LA Service adjusted to reflect the costs BT avoids by providing a passive service (as set out in Annex 15), as supplemented by our proposed guidance, meets the relevant tests set out in the Act. We have also explained further in Section 10 how our modelling approach on the Ethernet products aims to ensure BT is able to recover its costs by uplifting the forecast costs to take into account both the cannibalisation of active circuits by the proposed dark fibre remedy and the implementation and development costs of the proposed dark fibre remedy.

Powers under sections 87 and 88 of the Act

8.89 We are proposing a price control in the form of a basis of charges condition for BT as an SMP condition under section 87(9) of the Act with regard to Dark Fibre Services in the wholesale CISBO market in the RoUK excluding the Hull area and the wholesale CISBO market in the LP.

8.90 Section 88 of the Act states that Ofcom should not set an SMP condition falling within section 87(9) except where it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of the public electronic communications services.

8.91 In setting charge controls, section 88 also requires that we must take account of the extent of the investment in the matters to which the condition relates of the person to whom the condition is to apply – i.e. BT.

8.92 A price control can take a variety of forms, including but not limited to a charge control, basis of charges condition and/or safeguard cap.

There is a relevant risk of adverse effects arising from price distortion

8.93 As a result of our market analysis, in particular our assessment in Section 7 of the May 2015 BCMR Consultation, we consider the relevant risk of adverse effects arising from price distortion in accordance with section 88 is the risk that BT might fix and maintain its prices for Dark Fibre Services in the CISBO market in the LP and the CISBO market in the RoUK excluding the Hull area at an excessively high level.

Promoting efficiency

8.94 We consider that the setting of the proposed SMP condition is appropriate for the purpose of promoting efficiency. As we have discussed above, we consider that requiring BT to ensure that the differences between Dark Fibre Services and the reference Ethernet prices reflects the costs avoided by providing Dark Fibre Service rather than the Ethernet service would ensure that CPs' choice between the two products is economically efficient, and in particular would promote productive efficiency.

Promoting sustainable competition and conferring the greatest possible benefits on end-users

8.95 We also consider that the setting of the proposed SMP condition would be appropriate to promote sustainable competition and to confer the greatest possible benefits on end-users of public electronic communications services. A basis of charges condition together with the Ethernet charge controls we are proposing would help promote sustainable competition and ensure benefits to consumers by addressing the risk of excessive pricing. It also supports these aims by promoting efficiency as discussed above.

Investment

8.96 In proposing the basis of charges condition we have also taken into account the need to ensure BT has the appropriate incentives to invest and innovate.

8.97 The requirement under the condition to ensure that the difference between Dark Fibre Services and the reference Ethernet prices reflects the costs avoided by providing Dark Fibre Services (instead of the corresponding Ethernet service) is consistent with the objective of providing BT with incentives to invest and innovate.

8.98 The basis of charges condition would also be fixed for the duration of the charge control period, so this would provide BT with incentives to invest and innovate to bring about additional efficiency savings.

We have considered the tests under section 47 of the Act

8.99 Any SMP condition must also satisfy the tests set out in section 47 of the Act, namely that it must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate as to what it is intended to achieve; and

- in relation to what it is intended to achieve, transparent.

8.100 We consider these tests would be satisfied by our proposed condition.

The proposed SMP condition is objectively justifiable

8.101 We consider the proposed SMP condition to be objectively justifiable. In the May 2015 BCMR Consultation, we set out our proposal that BT has SMP for CISBO services in the Rest of the UK excluding the Hull area and for CISBO services in the LP. We also said that we are concerned that in the absence of the charge control, BT is unlikely to be incentivised to reduce its costs and set dark fibre prices at the competitive level. We therefore consider that our proposed approach to pricing of dark fibre would address the risk of excessive pricing or undue discrimination by BT.

The proposed SMP condition does not discriminate unduly

8.102 The proposed basis of charges condition would not discriminate unduly against a particular person or particular persons because any CP (including BT itself) can access the Dark Fibre Services which are subject to the proposed condition. In any event, Ofcom considers that the proposed SMP condition relating to Dark Fibre Services in the LP and the RoUK excluding the Hull area does not discriminate unduly against BT as the proposed condition addresses BT's market position, including its ability and incentive to set excessive charges for these services.

The proposed SMP condition is proportionate

8.103 We consider that the proposed SMP condition would be proportionate, as it will address the risk of excessive pricing and ensure that BT is able to earn a return on its investment. Also, maintaining a link between prices for Dark Fibre Services and the corresponding reference Ethernet services will minimise the risk of negative consequences associated with arbitrage and ensure that usage is focused on applications where there are benefits from innovation.

8.104 For the reasons set out above, therefore, we consider the proposed SMP condition would be:

- appropriate to achieve the aim of addressing BT's ability and incentive to charge excessive prices for Dark Fibre Services and promoting efficient and sustainable competition;

- necessary in that it does not, in our view, impose controls on the prices for Dark Fibre Services in the LP and the RoUK excluding the Hull area that BT may charge that go beyond what is required to achieve the aim of addressing BT's ability and incentive to charge excessive prices for these services and promoting efficient and sustainable competition;

- in our view, the least onerous of the options set out above whilst addressing, for Dark Fibre Services in the LP and the RoUK excluding the Hull area, BT's ability and incentive to charge excessive prices and promoting efficient and sustainable competition; and

- such that it does not, in our view, produce adverse effects which are disproportionate to the aim pursued which is to address, for Dark Fibre Services in the LP and RoUK excluding the Hull area, BT's ability and incentive to charge excessive prices and promoting efficient and sustainable competition.

The proposed SMP condition is transparent

8.105 Finally, for reasons discussed above, we consider the proposed SMP condition would be transparent. Its aims and effect are clear and it has been drafted so as to secure maximum transparency. The proposed text of the SMP condition is published in this consultation. Its intended operation is also aided by our explanation.

We have considered sections 3 and 4 of the Act

8.106 We also consider that the basis of charges condition furthers our duties under sections 3 and 4 of the Act.

8.107 For the reasons set out above, we consider that the proposed basis of charges condition would further the interests of citizens and further the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act. Further, we consider that, in line with section 4 of the Act, a basis of charges obligation in particular would promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers.

8.108 We consider the proposed basis of charges condition would, together with our other charge controls set out in this consultation, secure the availability throughout the United Kingdom of a wide range of electronic communications services.

8.109 We have also had regard in implementing the basis of charges condition to, in particular:

- the desirability of promoting competition in the relevant market;
- the desirability of encouraging investment and innovation in the relevant market; and
- the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.

8.110 Finally, in performing our duty to further the interests of consumers, we have also had regard in proposing the basis of charges condition, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.

The BEREC Common Position

8.111 In formulating the price control proposals discussed above, we have also taken utmost account of the BEREC Common Position including BP30, BP31 and BP32 which appear to us to be particularly relevant in this context.[326] We consider that our proposals are consistent with the best practice set out in the BEREC Common Position.

[326] BEREC Common Position.

Consultation questions

Question 8.1: Do you agree with our proposals regarding dark fibre pricing? If not, what alternative would you propose and why?

Section 9

Proposed controls for Accommodation, Excess Construction and Time Related Charges

Introduction

9.1 In order to use the regulated wholesale services that BT provides in the leased lines markets, CPs must also purchase certain ancillary services such as accommodation products or, on occasion, request construction work or services outside Openreach's terms of service. Accommodation services such as space and power in BT's local exchanges are an important technical element of the regulated services. Similarly, ECCs) allow access network extensions that are specific to an individual customer. TRCs are services such as faults repair, providing or rearranging services where the work is not covered within Openreach's terms of service. As these types of services are an essential part of the overall provision, the May 2015 BCMR Consultation considers it necessary to subject them to price controls.[327]

9.2 In this section, we discuss the details of our proposed charge controls for ECCs, TRCs and accommodation products.[328]

Summary of key proposals

9.3 We propose to treat the Ethernet and TI accommodation products that overlap with LLU Co-Mingling products the same as the LLU Co-Mingling products. The 2014 June FAMR Statement's charge control for the Co-Mingling (New Provides and Rentals) basket will continue to apply regardless of whether they are used by CPs for leased line products or for LLU. For the two services that fall outside of the regulation above, Access Locate and Cablelink, we propose a price cap of CPI-0%.

9.4 BT provides ECCs in two ways, either through its own staff (Direct ECCs) or through contractors (Contractor ECCs). We consider that current Contractor ECCs[329] are reflective of the costs of provision. We therefore do not propose to make any starting charge adjustments and propose a safeguard cap of GBCI-0%. We consider that some Direct ECCs[330] are out of line with the underlying costs of provision. Therefore, we are proposing to impose glide path controls on the charges in Table 9.1.

[327] Paragraphs 12.31 and 12.44, May 2015 BCMR Consultation.
[328] For the avoidance of doubt, where we discuss these terms, we refer to ECCs and TRCs specific to leased line services.
[329] Contractor ECCs refer to activities that are carried out by a contractor that is external to BT.
[330] Direct ECCs refer to activities that are carried out by BT (i.e. using internal direct labour and materials).

Table 9.1: Direct ECCs controls

Charge	Control
Blown fibre	CPI-21%
Cable (fibre or copper)	CPI+8.25%
Blown fibre tubing in duct	CPI+4.5%
Internal cabling	CPI+7%
Survey fee/Planning charge	CPI+5%

Source: Ofcom forecasts

9.5 Since May 2014, BT includes some ECCs as part of the EAD connection charge. This means that EAD customers face a higher average connection fee, in return for being exempted from ECCs up to £2,800. We propose that BT should be given flexibility to change the balancing charge of £548, but not the threshold charge which exempts the first £2,800 of new provisions of EAD services, throughout the control period to ensure cost recovery and revenue neutrality.

9.6 Finally, we also propose a starting charge adjustment on Ethernet TRCs to bring them down to the charges currently set for WLR and LLU: a 28% reduction to hourly Ethernet TRCs and a 12.3% reduction to the visit charge. After that, we propose a control of +0.2%.

Accommodation services

Background

9.7 Accommodation services such as space and power in BT's local exchanges are an important technical element of the regulated service.

9.8 Openreach currently provides two types of accommodation services: Co-mingling and Access Locate. Co-mingling is exclusively provided in support of LLU while Access Locate enables CPs to put site-specific communications equipment in BT's exchanges.

9.9 Access Locate and LLU Co-mingling services are currently charged at the same price.[331] This is because a number of overlapping Ethernet and TI accommodation products are currently treated the same as LLU Co-Mingling products and regulated by the charge control in the June 2014 FAMR Statement. This states that the Co-Mingling (New Provides and Rentals) basket will continue to apply regardless of whether the accommodation products are used by CPs for leased line products or for LLU.[332]

[331] Openreach, *Price List, Access Locate and Access Locate Plus*, https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=q%2B2vpfgQQ99SiimXeC7QjskLe4HVN3IVHU%2BmY7RLKoBZ6rNZujnCs99NbIKJZPD9hXYmiijxH6wrCQm97GZMyQ%3D%3D (Access Locate Price List).

[332] Paragraphs 4.311-4.314, Volume 2, June 2014 FAMR Statement.

Continuation of current controls

9.10 We propose to adopt a similar approach as the March 2013 BCMR Statement, which seeks to avoid the undesirable situation where these overlapping products would be subject to two different charge controls. As such, we do not propose to place any additional price control on these overlapping products; instead, we will require Openreach to price accommodation products used for leased lines the same as for when used for LLU Co-Mingling.

9.11 There are two services that fall outside of this regulation; the Access Locate Administration Fee, which is payable by LLU operators who want to convert their Revised agreement for Access Network Facilities (RANF) to Access Locate, and Cablelink, a further accommodation product in support of interconnection services. For these services, we propose a price cap CPI-0%.

9.12 The Access Locate Administration Fee continues to be relatively low; the current fee of £215 is the same as it was at the time of the March 2013 BCMR Statement.[333] Further, we consider a cap to be the most proportionate approach to allow cost recovery while preventing excessive pricing.

9.13 We also consider a cap to be a proportionate approach to the regulation of Cablelink. Cablelink volumes are small and the revenues account for less than [✂] of the total Ethernet basket. There has been some movement in prices of some Cablelink services since the last review; however, these have been in line with the RPI-0% cap imposed in the March 2013 BCMR Statement.[334]

9.14 Our approach in both cases is consistent with the March 2013 BCMR Statement which placed a price cap of RPI-0% and we have no evidence to suggest that an alternative approach would be more appropriate.

Excess Construction Charges

Background

9.15 Openreach levies ECCs when construction work is required to deliver a new leased line connection. It covers activities such as site survey, installation of new duct, blown fibre, drilling through walls and provision of a footway box.

2013 LLCC

9.16 In the March 2013 BCMR Statement, we did not consider it appropriate to include ECCs in the main Ethernet or TI baskets[335] for three reasons:

- ECCs share very few common costs with Ethernet (or TI) services as they are mostly construction costs;

[333] The name of this charge is 'License conversion from RANF to Access Locate', see Access Locate Price List.
[334] Openreach, *Price List, Cablelink*, https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=kgnGm8XSPQZEY5UMJxGwO9yDfzzeTWgW5o%2FPQLWLvfwlMnGHsqdC0vzO163bJmh34D91D7M0q8u%2F%0AIlSgtIFAKw%3D%3D (Cablelink Price List).
[335] In practice, the overwhelming majority of ECC revenues are driven by demand for Ethernet services rather than TI.

- the anticipated future trend of the costs is different to other Ethernet and TI services; and

- ECCs represented a low value compared to the overall Ethernet basket, meaning that putting them in a combined basket would not effectively control their prices without an additional sub-cap.

9.17 BT charges a unit price for each ECC.[336] In the March 2013 BCMR Statement, the evidence we obtained indicated that, with the exception of surveys, all of BT's ECC activities were contracted out and that BT was earning a weighted average margin of around 30%.[337] As these margins appeared to be based on a pass-through of BT's contractor costs plus a mark-up, we did not consider that there were sufficiently strong reasons to justify a glide path as there were unlikely to be any efficiency or innovation gains.[338] We therefore brought charges into line with costs via starting charge adjustments on each ECC activity.

9.18 We also imposed a separate control of GBCI-0% on each and every ECC during the charge control period. The GBCI was used as we considered that it better reflected construction costs, including the costs of labour and materials, than RPI and there was minimal risk that BT could affect the index, i.e. it is independent of BT's actual ECC costs.[339]

May 2014 ECC Direction

9.19 In May 2014, we implemented a direction that allowed Openreach to exempt new provisions of EAD services from the first £2,800 of ECCs (the threshold charge) and to make up the resulting loss of its revenue with a balancing charge of £548 (the balancing charge), which would be part of the standard connection charge for all EAD services.[340] The rationale for this was that the change would significantly reduce the lead times for provisioning of most of the EAD orders which incur ECCs. We also carried out an analysis that showed the proposed change would have no net impact on Openreach's revenues, i.e. the change was 'revenue-neutral'.

Proposed approach to controlling ECCs

9.20 We propose to continue charge controlling ECCs outside of the main Ethernet and TI baskets. Although the analysis in this section shows that certain ECC costs may be common with those in the Ethernet and TI baskets, e.g. direct labour, certain construction costs remain distinct and are likely to exhibit different trends going forward. Furthermore, there are practical issues involved in forecasting ECC costs and revenues.[341]

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[336] Openreach, *Price List*, *Excess Construction Charges*, http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=pAWshrQ7XRSLb9S%2BW8IAk0G8vUtdrlJTUevDC2QqJZ8lMnGHsqdC0vzO163bJmh34D91D7M0q8u%2FIlSgtIFAKw%3D%3D (ECC Price List).

[337] Paragraphs 22.30-22.31, March 2013 BCMR Statement.

[338] Paragraphs 22.48-22.51, March 2013 BCMR Statement.

[339] Paragraphs 22.79-22.81, March 2013 BCMR Statement.

[340] May 2014 ECC Direction.

[341] Firstly, such forecasts require assumptions around the incidence of ECCs and the distribution of dig distances going forward, which we (and BT) currently do not record. Secondly, BT does not currently identify the costs of ECCs separately and therefore does not report them within the RFS. This means that we have not had the information with which to forecast these going forward.

9.21 In order to determine the appropriate controls for the 2016 LLCC, we requested updated information from BT on its ECCs costs. This included BT's most recent external contract rates for each ECC activity. Our analysis of these data shows that, based on BT's contractor costs, current ECCs were broadly in line with unit costs. Margins on [✂], although for some activities the margins can range from [✂].[342] Our estimate of the weighted margin is around [✂].[343]

9.22 However, BT informed us that certain ECC activities are largely carried out internally by direct BT labour rather than by an external contractor. These activities are: blown fibre; cable (fibre or copper) installation; blown fibre tubing; internal cabling; and surveys/planning.[344]

9.23 BT provided estimates of its internal costs, which showed that the unit cost of blown fibre was [✂] than the external contractor cost, whereas for the other internal activities it was [✂]. Given that BT does not currently use a contractor for these activities, we propose to set charges on the basis of BT's internal costs of provision. This approach is consistent with our approach to the main Ethernet and TI baskets, in which we base the control on BT's costs of provision (see Sections 6 and 7).

9.24 BT's unit cost estimates are based on four main types of cost item:

- direct labour costs – the costs associated with BT employees directly undertaking ECC activities. We understand that BT used actual salary and FTE data to estimate these costs;[345]
- direct overheads – these costs are those associated with vehicle lease, communications and tools used by the employees undertaking ECC activities. We understand that BT used information on actual spend and charges to estimate these costs;[346]
- stores – these are costs associated with key materials such as cable, fibre, poles, frames, covers etc. We understand that BT used actual unit store costs from Openreach Procurement to estimate these;[347] and
- other overheads - BT also included a [✂] overhead which it argues converts the unit labour cost to a FAC estimate. BT calculated the overhead based on data for TRCs in the 2013/14 RFS. A similar overhead is also applied to the external contractor costs to generate the total unit costs. However, for the external activities a lower rate is assumed to apply [✂].[348] We understand that this is because the external overhead uplift excludes costs that BT does not incur when

[342] [✂], the unit cost of an ECC activity is dependent on the quantity sold (for example the average amount of fibre blown or the average length of cable installed) so there was some variation between our unit cost estimates in the March 2013 BCMR Statement and our updated estimates.
[343] BT response to 4th s135, Questions B1-B5. The weights we use to calculate the weighted margin are based on a sample of ECCs. Based on the revenues earned in this sample, we estimate the proportion of revenues earned by each activity (e.g. blown fibre, cable installation etc.) and use that as the weight. Around 80% of the weights are accounted for by [✂].
[344] BT response to 8th s135, Question D1.
[345] BT response to 15th s135, Question B2.
[346] BT response to 15th s135, Question B2.
[347] BT response to 15th s135, Question B3.
[348] This is an update of the overhead rate BT estimated in the March 2013 BCMR Statement, which was [✂].

contractors carry out activities, such as fleet rental, computing and systems software.[349]

9.25 Having reviewed the information that BT has provided, BT's estimates of direct labour costs, direct overheads and stores costs appear to be reasonable. However, we have some concerns over the appropriateness of the [✂] other overheads uplift:

- first, we note that BT's direct overhead estimates include an allowance for costs such as for [✂]. There appears to be some double-counting of such costs in the other overheads uplift; and

- second, it appears that there may be a risk that other costs included in the overhead uplift may also be recovered from other services. This is because all BT overheads, including those associated with Group, Accommodation, Procurement and internal charges, are allocated to other services in the RFS. They are not allocated to ECCs because of the way in which BT treats these costs.[350] Therefore, including any such overheads in ECCs may result in an over-recovery of overhead costs.

9.26 We therefore do not propose to accept BT's [✂] estimate of the other overhead uplift, but rather we propose to use the same uplift applied to ECC costs where an external contractor is used. Our understanding is that the direct labour and stores costs and the direct overheads should give rise to a cost estimate that is broadly equivalent to the contractor rates BT incurs when it out-sources ECCs to its contractor. On this basis, we consider that, in principle, the same other overhead uplift, to cover BT's other relevant costs of ECC provision, should be applied to both the direct costs and contractor costs. We therefore apply a [✂] uplift for other overheads, instead of BT's estimated [✂].

9.27 We note that when calculating the cost of certain Ethernet services, BT's regulatory accounts currently include an ECC credit that removes costs from the asset base for Ethernet services.[351] As discussed above, BT estimates ECC costs by matching them against revenues, and the latter are determined by ECC charges that were set in the 2013 LLCC using the external overhead uplift. Therefore, our proposed approach of using the external overhead uplift for internally provided ECCs is consistent with the accounting treatment for ECC-related assets in the RFS.

9.28 We have also considered whether to bring Direct ECCs in line with costs at the start of the period. i.e. via a starting charge adjustment, or at the end of the period, via a glide path. We believe that the latter is more appropriate, as it is consistent with the framework set out in Section 4. Given that Direct ECCs are mostly carried out by BT labour and internal overheads, a glide path will provide it with incentives to improve efficiency over the control period.

9.29 For Contractor ECCs, the scope for efficiency-improvement does not apply to the same extent. If charges were significantly out of line with costs, we would consider imposing a starting charge adjustment. However, as discussed above, BT's overall charges for Contractor ECCs are close to cost and so we do not make a starting

[349] BT response to 15th s135, Question B6.
[350] Specifically, BT does not calculate the costs incurred in providing ECCs; instead it estimates costs by matching them against ECC revenues, see pages 54 and 77 of BT's 2014 RFS.
[351] This credit is applied following the March 2013 BCMR Statement decision to remove capitalised ECC expenditure from BT's asset base. This decision was made to ensure that BT, which already recovers all ECC costs from its initial charge, did not over-recover its efficiently-incurred costs.

charge adjustment. We therefore propose to maintain BT's current charges and index them against the relevant inflation index (GBCI, as discussed below).

9.30 In order to calculate the X for each internal activity, we have followed the same analytical approach as our Ethernet and TI basket models (set out in Annex 6):

- we take the current unit cost and split this by labour (pay opex), overheads (non-pay opex) and capital expenditure;
- we use the Ethernet basket assumptions[352] for input prices changes[353] and efficiency to forecast unit costs over the charge control period;
- we assume that BT's current prices will remain in effect during the next charge control period; and then,
- we calculate the X based on forecast charges and costs in the final year of the control (both revenues and costs in the final year are expressed in real terms based on 2015/16 prices).

9.31 Adopting this approach gives us the following controls:

- CPI-21% for blown fibre;
- CPI+8.25% for cable (fibre or copper);
- CPI+4.5% for blown fibre tubing in duct;
- CPI+7% for internal cabling; and
- CPI+5% for survey fee/planning charge.

9.32 We consider CPI to be the appropriate inflation index for Direct ECCs activities, as explained in Section 3.

9.33 For Contractor ECCs, as discussed above, we have found that charges for these are broadly in line with costs so we propose to continue with our current control of GBCI-0% for each charge.

9.34 BT has requested that we change the sub-cap on ECCs from using the GBCI to using the Tender Price Index (TPI).[354] BT considers that the TPI reflects the movement in market rates and tender prices, the cost of which it considers is rising rapidly.

9.35 We have considered BT's submission but we continue to believe GBCI is the appropriate index in relation to Contractor ECCs. This is because TPI, which measures actual tender prices charged for construction work, includes contractor margins, which results in greater volatility as it is affected by changes in profitability over the economic cycle. This is illustrated in Figure 9.1 below, which presents historical GBCI, TPI and CPI rates as well as forecasts until 2018.

[352] The vast majority of leased line ECC revenues are generated from Ethernet services.
[353] We apply changes in the price of pay to direct labour (2.5%), non-pay price changes to overheads (2.6%) and asset price changes to stores (0%).
[354] [✂]

9.36 In a charge control, we generally apply a long-run measure of cost; applying an index driven by short-run fluctuations is therefore unlikely to be consistent with this approach. Furthermore, assuming there is a reasonably competitive market in the construction industry, profits should tend to zero in the long-run and so we believe it is suitable to use an index that is driven primarily by construction input costs only, i.e. GBCI, as it is a better measure of the long-run cost trend.

Figure 9.1: CPI, GBCI and TPI Comparison

[✂]

The balancing charge

9.37 As discussed above, the May 2014 ECC Direction allowed BT to impose a balancing charge of £548 on all EAD connections. This meant that all ECCs up to £2,800 (the threshold charge) were exempt, while the customer paid for any costs above this threshold.

9.38 In the May 2015 BCMR Consultation, we explain that since the new ECC charging arrangements have been in place there has been a reduction in the number of orders subject to a Direct ECCs and the rate of cancellations and 'deemed consent' delays has fallen.[355] Although it is not yet possible to determine the impact on provisioning lead times, we note that the majority of stakeholders have thus far been supportive of the new arrangements.[356] We therefore take account of these charging arrangements in our proposals for ECCs.

9.39 For the purposes of complying with the 2013 LLCC, in the May 2014 ECC Direction we allowed BT to exclude the £548 charge from its published price list for EAD connections.[357] Should BT continue to impose a balancing charge on EAD connections in order to exempt ECCs up to £2,800, we propose to continue with this approach and, as such, have not included the £548 charge when calculating revenues in the 2015 LLCC Model (see Annex 6).[358]

9.40 Our analysis in the May 2014 ECC Direction showed that the balancing charge of £548 and the exception threshold of £2,800 were consistent with revenue neutrality, in that the revenues BT earned from ECCs were set to be the same under the new charging structure as under the old structure. Revenue neutrality is important to ensure BT has the opportunity to recover its efficiently-incurred costs.

9.41 However, revenue neutrality might not be achieved going forward if the incidence and/or the distribution of ECCs changes from those observed when implementing the

[355] Paragraphs 10.40-10.45, May 2015 BCMR Consultation.
[356] Paragraph 1.8, May 2014 ECC Direction.
[357] For example, although BT's current connection charge for an EAD 100Mbit/s circuit is £1,950, when calculating the percentage change and accrued revenue for compliance, BT uses a charge of £1,402.
[358] Including the ECCs would also require us to incorporate ECC costs in our model which, as discussed above, we do not currently have information for.

May 2014 ECC Direction.[359] In order to mitigate this risk, we propose to afford BT some flexibility in terms of adjusting the balancing charge.

9.42 We do not consider it appropriate to provide BT with flexibility to adjust both the balancing charge and the exemption threshold. In the May 2014 ECC Direction we set the current threshold, and therefore the implied balancing charge, on the basis that it represented a reasonable balance between allocative efficiency and improving the provision of leased lines.[360] We continue to consider this to be the case.

9.43 We therefore propose that BT should be given flexibility to change the balancing charge, but not the threshold charge throughout the control period, in order to ensure cost recovery and revenue neutrality. We propose that the threshold charge will remain fixed at £2,800.[361]

9.44 In order to ensure that BT uses the flexibility appropriately, we propose that BT should demonstrate as part of its charge control compliance that its balancing charge is set to ensure revenue neutrality. Many of the difficulties associated with complying with a basket control also apply to setting an appropriate balancing charge (see Section 10). For example, ensuring revenue neutrality in the current year requires BT to forecast the incidence and distribution of ECCs.

9.45 We therefore propose to use prior period data when assessing compliance, which is consistent with our proposals for compliance on the Ethernet basket. At the end of each financial year BT should determine what its ECC revenues would have been in the prior period in the absence of a balancing charge for EAD connections, i.e. if all ECCs were charged using the Openreach price list. BT should then divide the 'exempted' ECCs by the number of EAD connections in the prior period to arrange at the new balancing charge, which will be used for the following year. Further details of this are provided in Section 10 and Annex 15.

Time related charges

Background

9.46 TRCs are levied for services such as fault repair and providing or rearranging services where the work is not covered within Openreach's terms of service.[362] They are provided across different markets, including business connectivity and fixed access markets. They are generally charged on a per visit basis, i.e. the Standard Chargeable Visit rate, which includes travel and the first hour of the job, plus any additional hours, i.e. the Additional Hour charge, with the charges varying depending on when the work takes place (e.g. within or outside normal business hours).

[359] For example, if the proportion of customers requiring an ECC increases (decreases) or if the average dig distance increases (decreases) then BT's costs will increase (decrease). If the balancing charge and the exception threshold remain fixed then BT's revenues will not increase (decrease) in line with costs, meaning that it is not revenue neutral and BT will under-recover (over-recover) its costs.
[360] Paragraph 3.15, May 2014 ECC Direction.
[361] Unless BT decides to remove the balancing charge and exemption threshold and return to its previous policy of charging for ECCs as they are incurred.
[362] Openreach, *Price list, Time Related Charges (Including Shifts)*, https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=hcaYjlWegP2u2KS8FTdcOBScuIM1Opem5f8dVePnh8UlMnGHsqdC0vzO163bJmh34D91D7M0q8u%2F%0AIISgtIFAKw%3D%3D (TRC Price List).

9.47 TRC revenue related to business connectivity markets was [✂] in 2013/14; ([✂] related to alternative interface symmetric broadband origination (AISBO)/multiple interface symmetric broadband origination (MISBO)[363] and [✂] related to TISBO). Total TRC revenue amounted to [✂], meaning that the proportion accounted for by leased line services was around [✂] (the vast majority of TRCs relate to the fixed access markets).[364] TRCs revenues accounted for a very small proportion of Ethernet and TI revenues in 2013/14.

9.48 In the March 2013 BCMR Statement, we noted that Openreach applied the same prices regardless of whether TRCs were carried out for WLR, LLU or Ethernet services and they were also subject to a cost orientation obligation in the WLR/LLU charge control. We, therefore, decided that further regulation was disproportionate as pricing was already constrained. However, we did note that if Openreach were to discriminate between types of product user to distort competition, we would consider more direct intervention.[365]

9.49 We considered further our approach to regulating TRCs in the June 2014 FAMR Statement, and concluded that in light of the evidence available, BT was earning revenues in excess of costs for TRCs, and as a result consumers were experiencing harm. As a result we imposed a 28% reduction to hourly TRC charges and a 12.3% reduction to visit charges, in order to bring them into line with 2014/15 cost estimates. This involved a two-stage process:

- first, we sought to identify the appropriate reduction required to bring TRC charges more into line with costs. This was based on an analysis of TRC engineering rates, using Openreach management accounts and other information received from BT, uplifted by an estimate of overhead costs, which resulted in a 12.3% reduction to all TRC rates; and

- second, we made an additional reduction to the hourly charge rate to take into account the fact engineers work fewer minutes than BT bills for due to the rounding in BT's billing approach, i.e. it bills in increments of one hour irrespective of the job duration. This was based on an analysis of a sample of TRC jobs, where we compared the job duration with the TRCs actually billed, in order to bring revenues into line with costs. This resulted in an additional reduction of 18% to all hourly charges, i.e. the hourly element of the Standard Chargeable Visit and the Additional Hour charge.

9.50 We then indexed these charges by +0.2% per year to reflect future cost changes based on wage inflation and an efficiency assumption.[366] The June 2014 FAMR Statement imposed this charge control for those TRCs "*that fall within the network access requirement*" only. BT subsequently reduced TRCs for WLR, LLU and GEA but did not reduce prices for Ethernet TRCs.

Proposed changes to controlling TRCs

9.51 Given BT's historical approach of pricing TRCs at the same level irrespective of the wholesale service they were provided for, and the absence of a clear rationale of underlying cost differences for why the charges should be different, our starting position is to apply the same adjustments that we made in the June 2014 FAMR

[363] Currently, CISBO.
[364] BT response to 8th s135, Questions A1-A3.
[365] Paragraphs 20.81-20.83, March 2013 BCMR Statement.
[366] Section 18, Volume 1, June 2014 FAMR Statement.

Statement to TRCs in the 2016 BCMR Statement. However, BT has made representations relating to the data provided for the June 2014 FAMR Statement, and in particular that some of the data does not directly relate to TRCs in the business connectivity markets.[367] We have therefore considered the adjustments made in the June 2014 FAMR Statement further in light of BT's comments.

9.52 Firstly, we consider that our overall assessment that BT was earning revenues in excess of costs for TRCs at their previous level is relevant for Ethernet TRCs. In particular, we understand that the data we used to assess this in the June 2014 FAMR Statement included revenues and costs associated with Ethernet TRCs. Therefore, although they only account for a small proportion of TRCs overall, we consider that Ethernet TRCs charged at the level assessed in the June 2014 FAMR Statement are also likely to be in excess of costs, meaning that there is a risk that consumers are experiencing harm as a result. Therefore we consider that an adjustment to current Ethernet TRC price levels is necessary in order to bring them into line with costs.

9.53 In light of this we now consider the relevance of the two adjustments, discussed above, that we made in the June 2014 FAMR Statement for Ethernet TRCs, i.e. bringing TRC charges into line with costs and applying a reduction that takes into account the fact that engineers work fewer minutes than BT bills for.

9.54 In relation to the first adjustment, which sought to bring charges into line with costs, we note that this was based on an analysis of TRC engineering rates. We estimated these using Openreach management accounts and other information received from BT, uplifted by an estimate of overhead costs. The estimate of TRC engineering rates was based on labour and overheads that were applicable to both copper and Ethernet jobs, and it is not clear that Ethernet TRCs should be expected to recover a different level of overheads to other TRCs. We therefore propose to apply a 12.3% reduction to Ethernet TRCs to bring their charges into line with costs, based on the same analysis set out in the June 2014 FAMR Statement.

9.55 The second adjustment took into account the fact that engineers on copper TRCs generally work fewer minutes than they bill for, given BT rounds up to the next full hour. As set out above, this was based on an analysis of actual job durations compared to the time that had been billed for. The analysis conducted in the June 2014 FAMR Statement did not include data on Ethernet TRCs.

9.56 BT has now provided us with similar data for Ethernet TRC services.[368] The data BT submitted suggests that a significant proportion of Ethernet TRCs are longer than one hour, which is different to the data on copper TRCs where the majority of jobs only required a Standard Chargeable Visit. Given that Ethernet jobs tend to be longer in duration, this could suggest that on average, the rounding of time worked for billing purposes may not result in as significant over-recovery as was the case for copper TRCs.

9.57 However, having reviewed the information on for Ethernet TRCs, we have some concerns around the quality of the data. In particular we note that for the majority of jobs, the total on-site time recorded (i.e. the amount of time that the engineer spends at the site) is higher than the time that is used for billing purposes. BT has not yet been able to fully investigate these issues but it notes that the time recorded for

[367] For example, it argued that [✂] are not relevant for Ethernet TRCs. BT response to 8th s135, Questions A1-A3.
[368] BT response to 11th s135, Question A2.

billing purposes is not recorded in the same way as on-site time. BT also said that there are some instances where an engineer does not close a job due to other work priorities until late in the day or the following day, which increases the onsite time.[369] Therefore, it has not been possible to compare the 'true' job duration with what was actually billed to analyse the rounding issue using this data.

9.58 In the absence of suitable data, we have no evidence to support different TRC charges to those adopted in the June 2014 FAMR Statement. We have also taken into account that prior to the reductions imposed in that statement, charges for TRC services were the same for copper and Ethernet TRCs.

9.59 We, therefore, propose that Ethernet TRCs should be set at the same level as copper TRCs. They will also be indexed by +0.2% per year, which is consistent with our decision in the June 2014 FAMR Statement. However, we would welcome stakeholder views on whether an alternative approach would be justified and appropriate.

Consultation questions

Question 9.1: Do you agree with our proposals for charge controls for accommodation? If not, what alternative would you propose and why?

Question 9.2: Do you agree with our proposals for charge controls for ECCs? Please explain your answer with supporting information.

Question 9.3: Do you agree with our proposals for charge controls for TRCs? If not, what alternative would you propose and why?

[369] Email from [✂] (BT) to [✂] (Ofcom), dated 18 May 2015, entitled "RE: LLCC 11th s135: A1 and A2 - Follow up questions II".

Section 10

Implementation of the new charge controls and compliance

Introduction

10.1 The text of the draft SMP conditions that set out the proposed new charge controls is contained in the statutory notification published at Annex 15 to this consultation document.

10.2 The purpose of this section is to explain how the various policy proposals set out in the main sections are implemented in the draft conditions in Annex 15. Our proposals for Ethernet and TI baskets are set out in Sections 5, 6 and 7 and our proposed controls for TRCs, ECCs and Accommodation services are set out in Section 9. Our proposals to have a safeguard cap on very high CISBO services and a condition for the EAD/EAD LA pricing differential are explained in the May 2015 BCMR Consultation. We do not discuss the implementation of our proposals for dark fibre here as this is contained in Section 8 and in guidance at Annex 14. The legal tests that we have considered when implementing these proposals are also set out below.

10.3 This section also outlines how we propose to ensure compliance with the proposed charge control.

Overview of the controls

10.4 We are proposing to impose a series of restrictions on the charges BT is able to charge through the control period. First, for TI, Ethernet and TRCs services we are proposing to impose reductions in BT's charges on 1 April 2016 (i.e. starting charge adjustments). Second, for the period from 2 April 2016 to 31 March 2019, we are proposing to control BT's TI, Ethernet, Very High CISBO, TRCs, ECCs and Accommodation services through a series of CPI-X price caps. Our proposed approach to the starting charge adjustments and the charge controls is to give BT flexibility over how the reductions are implemented, rather than setting specific levels for each charge. However, we place some restrictions on BT's flexibility in implementing the starting charge changes and the charge controls through a series of sub-baskets and sub-caps. These various controls on BT's charges are implemented through formulae within the SMP conditions.

Baskets and services covered by the conditions

10.5 The structure of the SMP conditions broadly follows each of the baskets that we propose:

- draft SMP condition 5A covers Ethernet services at bandwidths up to and including 1Gbit/s falling within the wholesale markets for CISBO in the London Periphery and the Rest of UK excluding the Hull area in which we propose in the May 2015 BCMR Consultation to find that BT has SMP (Ethernet Services Basket). The Ethernet Services Basket includes:

- sub-basket controls for 1Gbit/s EAD, Main Link and Interconnect; [370]
- a requirement that the rental and connection charges for EAD be set by reference to the rental and connection charges of EAD LA, adjusted to reflect the differences in the LRIC of EAD. We propose that the condition should apply from the second year of the charge control period to enable BT to adjust its prices in the first year; [371] and
- a sub-cap on all charges;[372]

- draft SMP condition 5B covers WDM services and Ethernet services at bandwidths above 1Gbit/s falling within the wholesale market for CISBO in the RoUK excluding the Hull Area and the London Periphery in which we propose in the May 2015 BCMR Consultation to find that BT has SMP (Very High CISBO safeguard cap);[373]

- draft SMP condition 5D covers relevant products/services falling within the wholesale market for low bandwidth TISBO in the UK excluding the Hull Area, at bandwidths up to and including 8Mbit/s in which we propose in the May 2015 BCMR Consultation to find that BT has SMP (TI basket).[374] The TI basket includes:
  - a sub-basket on 2Mbit/s RBS, NetStream 16 Longline and SiteConnect;[375] and
  - a sub-cap on all charges;[376]

- draft SMP condition 5E covers Accommodation services in all the relevant wholesale markets in which we propose in the May 2015 BCMR Consultation to find that BT has SMP (Accommodation services basket).[377]

- draft SMP condition 5F covers relevant ECCs in all the relevant wholesale markets in which we propose in the May 2015 BCMR Consultation to find that BT has SMP:[378]
  - in the Annex to condition 5F, we divide the products and services into Direct and Contractor ECCs to reflect the different controls imposed on each category; and

[370] Draft SMP condition 5A in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 6 and the legal tests are in this section.
[371] Draft SMP condition 5A in Annex 15. The reasoning for the inclusion of this proposal is set out in paragraphs 10.18-10.35, May 2015 BCMR Consultation.
[372] Draft SMP condition 5A in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 6 and the legal tests are in this section.
[373] Draft SMP condition 5B in Annex 15. The reasoning for the inclusion of this proposal is set out in paragraphs 8.188-8.199, May 2015 BCMR Consultation.
[374] Excluding ECCs and TRCs.
[375] Draft SMP condition 5D in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 7, and the legal tests are in this section.
[376] Draft SMP condition 5D in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 7, and the legal tests are in this section.
[377] Draft SMP condition 5E in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 9, and the legal tests are this section.
[378] Draft SMP condition 5F in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 9 and the legal tests are in this section.

- we have also added a condition to continue to give effect to the May 2014 ECC Direction establishing the balancing charge and exemption threshold;[379] and

- draft SMP condition 5G covers relevant TRCs in all the relevant wholesale markets in which we propose in the May 2015 BCMR Consultation to find that BT has SMP.[380]

10.6 Our proposals include sub-baskets within each of the groups of services listed above and basket controls under the draft SMP conditions 5A and 5D. These controls are summarised below, with indicative values for the caps based on our base case value of X set out in Sections 6, 7 and 9.

10.7 Annex 15 lists the groups of specific products and/or services that we propose should be subject to each respective control. We propose to define the specific services by reference to BT's price lists and reference this in the annexes to each of the SMP conditions. We propose to include a higher level description of services than in the March 2013 BCMR Statement. We consider this is sufficiently clear to identify the services within the charge control. We welcome views as to whether stakeholders agree that the higher level description of services in the draft SMP Conditions is sufficiently clear to identify the services within the charge control.

The charge control formulae

10.8 The SMP conditions, as proposed, will have the following effects that relate to (i) the starting charge adjustments and (ii) the charge controls:

i) **starting charge adjustments: First,** the conditions will set starting charge adjustments for 1 April 2016 for the services specified. This is done by means of the Controlling Starting Charge Percentage formulae. **Second,** the conditions will ensure that average charges for services subject to starting charge adjustments are no higher than required by the Controlling Starting Charge Percentages, as specified. This is done by means of the Percentage Starting Charge Change Formulae; and

ii) **charge controls: First,** the conditions will set charge controls from 2 April 2016 until 31 March 2019 for the services specified. This is done by means of the Controlling Percentage formulae. **Second,** the conditions will ensure that average charges for services subject to charge controls are no higher than required by the Controlling Percentages, as specified. This is done by means of the Percentage Change formulae.

10.9 We have used as a basis the formulae adopted in recent market reviews[381] to ensure consistency. The proposed SMP conditions and formulae are set out in full in Annex 15. Table 10.1 below outlines the specific parts of the conditions where the

[379] Draft SMP conditions 5F.8 to 5F.10 in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 9 and the legal tests are in this section.
[380] Draft SMP condition 5G in Annex 15. The reasoning for the inclusion of this proposal is set out in Section 9 and the legal tests are in this section.
[381] Ofcom, *Review of the fixed narrowband services markets: Statement on the proposed markets, market power determinations and remedies,* 26 September 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf (September 2013 Narrowband Statement); June 2014 WBA Statement; and June 2014 FAMR Statement.

starting charge adjustment formulae relevant to each of the baskets and services are set out. Table 10.2 below outlines the specific parts of the conditions where the charge control formulae relevant to each of the baskets and services are set out.

Table10.1: Starting charge adjustment formulae applied to baskets and services

	Controlling Starting Charge Percentage	Percentage Starting Charge Change
Ethernet basket	Condition 5A.1	Condition 5A.2
TI basket	Condition 5D.1	Condition 5D.2

Source: Ofcom, Annex 15, June 2015 LLCC Consultation

Table 10.2: Charge control formulae applied to baskets and services

	Controlling Percentage	Percentage Change
Ethernet basket	Condition 5A.7	Condition 5A.6
EAD 1Gbit/s Sub-basket	Condition 5A.7	Condition 5A.6
Main Link Sub-basket	Condition 5A.7	Condition 5A.6
Interconnect Sub-basket	Condition 5A.7	Condition 5A.6
Ethernet sub-cap	Condition 5A.11	Condition 5A.12
Basket with Very High CISBO safeguard cap	Condition 5B.1	Condition 5B.2
TI basket	Condition 5D.7	Condition 5D.6
TI Mobile Services Sub-basket	Condition 5D.7	Condition 5D.6
TI sub-cap	Condition 5D.11	Condition 5D.12
Accommodation services	Condition 5E.1	Condition 5E.2
Direct ECCs	Condition 5F.4	Condition 5F.3
Contractor ECCs	Condition 5F.5	Condition 5F.3
TRCs	Condition 5G.4	Condition 5G.3

Source: Ofcom, Annex 15, June 2015 LLCC Consultation

10.10 For both the Starting Charge Percentage and Controlling Percentage formulae used in the first relevant year, we propose to use the CPI for the 12 months prior to 30 September 2015. As this will be six months prior to the start of the charge control, we consider that this should provide BT with sufficient time to implement price changes within the appropriate notification periods. This approach is consistent with the approach adopted in the March 2013 BCMR Statement.[382] For all subsequent relevant years, we also propose that the value of CPI for the 12 months prior to the 30 September immediately before the beginning of the relevant year should be used for the purposes of assessing compliance with the charge control.

Ensuring compliance

10.11 In this section, we examine various issues in ensuring compliance with the charge controls including taking into account the timing of charge changes; basket weights; our approach to term products and discounts; carrying over provisions; our proposal to allow BT to comply with starting charge adjustments and charge control formulae simultaneously and flexibility to deal with changes in services.

BT is able to change charges at any time, but the formula takes into account the timing of those changes

10.12 We have designed the charge control formula so that it takes into account the timing of any changes BT makes. BT can change charges for services at any time during a particular year. However, the charge control formula explicitly takes into account *when* changes to charges occur. If BT were to introduce a charge reduction on the last day of a particular Relevant Year, it would be better off, in revenue terms, relative to a charge reduction on the first day of the formula year.[383] If BT were to delay a decrease, relative to making any charge adjustments on of the anniversary of the control coming into force in each subsequent year, it would need to reduce charges by a larger amount later in the Relevant Year to achieve compliance with the basket control. Therefore, the compliance formulae outlined above and used within the SMP conditions take the timing of charge changes into account.[384]

We propose to use prior period revenues to weight price changes

10.13 The proposed controls on BT's charges will limit the weighted average change in BT's charges to a maximum of CPI-X. Under the basket approach, it is necessary to

[382] Paragraph 24.57, March 2013 BCMR Statement.

[383] For example, assume that BT changes its charges for two services, say by 10%, on the first day of the Formula Year and keeps them at that level for the whole year. Other things being equal, then these charge reductions should result in its revenues declining by 10% (relative to the prior year). However, if BT delayed a reduction in the charges by six months and introduced the reduction in the second part of the year, then BT would be better off in revenue terms as it would have a six month period where charges were unchanged and only a six month period where charges were 10% lower. Other things being equal, this would result in BT's overall revenues being 5% lower relative to the prior year.

[384] The formula calculates the percentage reduction for that service as a weighted average of the changes in charges (relative to the starting charge for the Formula Year). The weights applied would be based on the duration of the Formula Year a particular charge was applicable. For example, a charge that applied for half a year (182 days) would have a 50% weight (182/364). So, if the basket requirement were to decrease charges by, say, 10% and BT kept charges unchanged for six months, then it would need to decrease charges by 20% in the final part of the year to achieve the required reduction in charges for that Formula Year. In this instance, the calculated charge reduction would be: 50% x (0% price change) + 50% x (20% price change) = 10%.

calculate the weights apportioned to the services within the basket to assess BT's compliance with the controls. Regulators who have applied this form of control have generally used one of two main methods of calculating these weights – 'prior period revenue weights' or 'current period revenue weights'.

10.14 Under the prior period weighting approach, basket weights are set equal to the proportions of basket revenues accruing to the relevant services in the period prior to the one in which the price change occurs. Under the current period weighting approach, the weights are set equal to the proportion of current period basket revenues accounted for by each service as a proportion of total current period revenues.

10.15 During periods of stable volumes, these two approaches are broadly similar. However, where volumes, and volume mix in particular, are not stable, as in the case of leased lines, they can involve different advantages and disadvantages.

10.16 The current period approach can give rise to practical compliance difficulties for the regulated firm. Under this approach the firm needs to base its price changes for the current period on forecast volumes for that period, as the volumes are a key driver of the weights. Producing accurate forecasts can be difficult, giving rise to compliance risks and the need for mechanisms to address non-compliance, for example retrospective adjustment for errors in forecasting.

10.17 Another potential disadvantage with current period weights is that average revenue can be affected by a change in the product mix within the basket. For example, average revenue will fall if the quantity sold of a lower priced product within the basket increases relative to the quantity sold of a higher priced product, even if the prices of both products are unchanged. This is sometimes referred to as the 'apples and pears problem'.[385] In some markets, e.g. gas or electricity markets, in which average revenue controls have been used, output can be expressed in a convenient common unit, which avoids this problem, but this is much less likely to be true in telecoms markets.

10.18 Under the prior period approach, the weights to be used in the compliance assessment would be known in advance of setting regulated charges. This means that the regulated firm can set charges with a higher degree of certainty as to whether or not those charges will comply with the control. It is also more transparent for stakeholders. Ofcom typically adopts the prior period approach largely as a result of these practical advantages.

10.19 However, although it is less practical, the current period approach can result in average changes in charges for the control year that more tightly control the firm's revenues than the prior period approach. This is because where prior weights are used, the regulated firm has an incentive to maximise revenues by focusing more significant price reductions to products with declining volumes. This incentive increases as the variation in year-on-year volume changes increases.

10.20 This incentive also has implications for migration, as reducing the prices of products with declining volumes could give rise to inefficient migration signals. However, adopting a prior period as close to the current period as possible may help to minimise such incentives, while avoiding the practical concerns of the current period

[385] So called because if apples and pears are sold at different prices, compliance with a control on the average revenue from fruit will be affected by changes in the relative quantities of apples and pears sold.

approach. This is particularly relevant in the case of the migration from legacy Ethernet to new Ethernet services, which is discussed in Section 6. Alternatively, or in addition, the use of sub-caps can reduce the ability of the firm to adopt pricing behaviour that sends inefficient migration signals.

10.21 Given the practical issues involved in using current period weights, we propose to use the prior period weighting approach. However, over the course of the charge control period, customers are predicted to continue migrating from legacy to new services. The use of prior period weights in the model could therefore mean that legacy services are given a higher weight, in terms of compliance, than if we used current-period weights. Although prior period weights do not cause problems if each charge is reduced by the same amount, they can raise issues if BT wishes to reduce some charges by less than others. For example, if BT wishes to make all price reductions on EAD services and none on legacy Ethernet services to encourage migration, prior period weights would mean that the price reduction required would be greater than if in-period weights were used.

10.22 We therefore propose that for each year of the control, compliance will be based on volumes at 31 December in the case of rentals or the 12 months up to 31 December in the case of non-rental products in the year prior to the start of the control (e.g. 31 December 2015 for the control year starting 1 April 2016). These volumes will be multiplied by the average price during the 12 months prior to the start of the charge control year (e.g. the 12 months prior to 31 December 2015 for the control year starting 1 April 2016).[386]

10.23 We believe this approach strikes an appropriate balance in terms of reducing the time lag for prior period weights and ensuring that BT knows what price changes it needs to make in order to comply with the control prior to the beginning of each charge control year.

10.24 We note that our proposal is consistent with the approach we adopted in the March 2013 BCMR Statement for Ethernet services but different for TI, where we based revenue weights on rental volumes at 30 September in year prior to the control year. For non-rental products, the relevant volumes were the cumulative volumes for the year ended 30 September.[387]

10.25 One of the main reasons for having different periods for TI and Ethernet in the March 2013 BCMR Statement was that BT was required to give 28 days' notice for a price reduction and 90 days' notice for a price increase.[388] As the X was positive for TI (+2.25%), using volumes at, or up to, 31 December in the previous year would not have given BT Wholesale enough time to calculate and notify price increases in time for the next charge control year. However, given that we now propose a negative X for TI as well as a sub-cap of CPI-CPI on each charge in the TI basket, BT will not be able to increase any charges. We therefore consider it appropriate to have consistent prior period weights for both the Ethernet and TI baskets.

[386] For starting charge changes on 1 April 2016, we propose that the weights also be based on volumes at 31 December 2015 in the case of rentals or the 12 months up to 31 December 3015 in the case of non-rental products. These are therefore the same weights that will apply for the first year of the charge control.
[387] Paragraphs 18.154-18.157, March 2013 BCMR Statement.
[388] In the May 2015 BCMR Consultation, we have proposed to impose requirements on BT relating to the notification period for changes to any charges which are 28 days' notice for new services, 28 days' notice for price reductions and 90 days' notice for all other changes.

Term products and discounts

Certain term products will contribute towards BT meeting its charge control obligations

10.26 As discussed in Section 5, we are proposing that time-limited discounts and three year term products offered by BT will count towards meeting its charge control obligations.

10.27 Specifically, within the charge control formulae above, the prices which BT needs to include when assessing compliance are prices including time-limited discounts and three year term products and excluding any other discounts. However, as discussed in Section 5, we propose a requirement that a three year term product should have no connection charge and that the rental charge for all new and existing customers at any given time should equal the three year TCO of a one year product divided by three.

Other discounts will not contribute towards BT meeting its charge control obligations

10.28 As discussed in Section 5, we are proposing that none of the volume or geographic discounts and five or seven year term products offered by BT would count towards meeting its charge control obligations.

10.29 Specifically, within the charge control formulae above, the prices which BT needs to include when assessing compliance are prices excluding any discounts or five and seven year products in the published price list.

BT is allowed to carry over differences in the average charge for a basket to the next charge control year

10.30 For the charge control baskets, we are proposing that BT is allowed to carry over any price reductions it makes in excess of the requirements of the charge control for that year. That is, if BT's average charge for these baskets at the end of the Relevant Year is lower than required by the associated CPI-X constraint, it is able to carry over the difference into the next charge control year. This means that the benchmark for assessing BT's compliance with the control in the following year is the level of charges BT was required to achieve, rather than the level it actually achieved.

10.31 Conversely, if BT's average charge is higher than the required level, it would have to take the excess into account in the following year. The use of a mechanism to correct for prices higher than those assumed by the charge control formula does not imply that BT is permitted to set prices which are above those assumed by the charge control.[389] However, this mechanism addresses the impact of fluctuations in the factors included in the charge control formula resulting in a difference between forecast and actual compliance with the control. We are not proposing to apply those carry-over provisions for the sub-baskets within the main baskets.

10.32 The TI basket carry-over provision within draft SMP Condition 5D is covered in. The Ethernet basket carry-over provision is covered in draft SMP Condition 5A.

[389] In this regard, we note that the proposed conditions would require BT to repay the affected CPs any excess revenue it earns should its average charge be higher than the required level in a particular year. These requirements are set out in draft SMP Condition 5D for the TI basket and draft SMP Condition 5A for the Ethernet basket.

BT is allowed to comply with both the starting charge adjustments and charge control formulae by making one price change on 1 April 2016

10.33 For the first year of the control, the draft SMP Conditions will require BT to make starting charge adjustments to its charges on 1 April 2016 and to change its charges in accordance with the charge controls on any date from 2 April 2016 to 31 March 2017. We recognise that two separate price changes within a short space of time may be inconvenient for BT to enact and potentially disruptive for its customers. However, we note that BT can comply with both the starting charge adjustment and charge control obligations by making one set of price changes on 1 April 2016 if it can demonstrate that the resulting charges are in accordance with the requirements in draft SMP Condition 5A and 5D.

Flexibility to deal with any changes in the services offered by BT

10.34 As discussed above, we propose to set controls by reference to a particular set of products currently offered by BT. However, BT may wish to amend or remove services, or to bring in new services within the duration of the proposed charge controls. We discuss below how we have addressed in the draft SMP conditions the possibility of BT making such variations to its service offering and our proposal to deal with this within the charge control.

10.35 We have explained above our approach to services falling within the scope of the control, including our proposal to define the specific services by reference to BT's price lists. Those lists only include BT's services that we expect to exist when the charge control commences.

10.36 Telecoms markets are subject to ongoing product development and innovation. We therefore anticipate that BT could develop products/services that wholly or substantially replace the products/services referred to in the annexes to each draft SMP condition.

10.37 To reflect that consideration, we have included a provision in the draft SMP conditions that ensures in its effect that, if BT were to introduce a new service that wholly or substantially replaces an existing service using, for example, a new, more efficient technology, the replacement service would fall within the scope of the proposed charge control. For example, new services that fall within the scope of relevant Ethernet or TI basket caps should remain subject to that same overall basket cap for the duration of the charge control period, irrespective of the underlying technology that BT uses to provide those services. We consider that this provision ensures that BT is incentivised to introduce new more efficient services.

We include provisions concerning 'material changes' to charge controlled services

10.38 As part of our charge control conditions, we propose to include general provisions related to material changes that could impact on the effectiveness of the charge control. We would give regulatory effect to such changes by giving a direction under these conditions, following any consultation under the relevant procedures under the Act.

10.39 These provisions, which are included in each of the draft SMP conditions, cover any material changes, other than to a charge, including to:

- a material change to any product or service, which can include the introduction of a new product or service wholly or substantially in substitution for that existing product or service;
- the date on which BT's financial year ends; and
- the basis of the Consumer Price Index.

Legal tests

10.40 We consider that each of the proposed price controls on wholesale leased lines services would satisfy the legal tests set out in the Act and would be in accordance with our legal duties.

10.41 We explained in the May 2015 BCMR consultation why we considered that, in principle, our proposal to impose price controls (including both the charge controls and the safeguard cap) would satisfy the relevant legal tests. However, we consider this in more detail below in light of the specific proposals set out in this consultation.

10.42 In particular, we set out below why we consider that:

10.43 each of the proposed price controls would be authorised pursuant to Section 87(9) of the Act, and would satisfy the tests in section 88 of the Act and the criteria in Section 47(2) of the Act;

10.44 in formulating each of the proposed price controls, we have complied with our relevant statutory duties, particularly those under Sections 3 and 4 of the Act; and

10.45 in formulating each of the proposed price controls, we have taken utmost account of the EC Leased Lines Pricing Recommendation and BEREC Common Position.

10.46 **Legal tests relating to all of the proposed price controls excluding very high CISBO safeguard cap**

10.47 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person (in this case BT) has SMP in an identified services market (in this case three CISBO and TISBO wholesale markets[390]), Ofcom shall set such SMP conditions authorised by that section as Ofcom considers appropriate to apply to that dominant provider in respect of the relevant network or relevant facilities and apply those conditions to that person.

10.48 Section 87(9) of the Act authorises the setting of SMP conditions to impose on the dominant provider:

10.49 such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities;

10.50 such rules as Ofcom may make in relation to those matters about the recovery of costs and cost orientation;

[390] In the May 2015 BCMR Consultation we identify the following markets where BT has SMP: 1) the wholesale market for CISBO services in the London Periphery (LP); 2) the wholesale market for CISBO services in the RoUK excluding Hull; and 3) the wholesale market for low bandwidth TISBO services (up to and including 8Mbit/s) in the UK excluding the Hull area

10.51 such rules as they may make for those purposes about the use of cost accounting systems; and

10.52 obligations to adjust prices in accordance with such directions given by Ofcom as they may consider appropriate.

10.53 Section 88 of the Act states that Ofcom should not set an SMP condition falling within section 87(9) except where it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of the public electronic communications services.

10.54 In proposing price controls, section 88 also requires that we must take account of the extent of the investment in the matters to which the condition relates of the person to whom the condition is to apply.

10.55 For the purpose of explaining why we consider the legal tests to be met, we have set out our position on all of the proposed price controls for wholesale leased lines services (excluding the proposed very high CISBO safeguard cap) together below. We have also identified, where appropriate, certain specific points that we consider to be particularly relevant to individual aspects of the proposed price controls, or to the price control for particular services.

10.56 We do not discuss the legal tests for our proposals for dark fibre here as these are contained in Section [8] and in guidance at Annex [14] (as well as in our general consideration of the legal basis for the proposed imposition of a dark fibre remedy as discussed in detail in sections 7 and 9 of the May 2015 BCMR consultation).

10.57 We discuss the legal tests for our proposals in relation to BT's Regulatory Financial Reporting in Section 11.

<u>We have considered the tests under sections 87 and 88 of the Act</u>

10.58 We consider that the proposed SMP conditions would satisfy the tests set out in Section 88 of the Act. Our reasoning is set out in detail in the relevant parts of this consultation relating to the different proposed price controls, in particular sections 5, 6 and 7 in relation to the proposed controls for Ethernet and TI services, and section 9 in relation to the proposed controls for Accommodation, Excess Construction Charges and Time Related Charges. The reasoning for the requirement that the rental and connection charges for EAD be set by reference to the rental and connection charges of EAD LA is contained in Section 10 of the May 2015 BCMR Consultation. Therefore the specific points set out below should be read in conjunction with the more detailed analysis in those sections.

10.59 As set out in the May 2015 BCMR Consultation,[391] and explained further in Sections [5-7 and 9] of the June 2015 LLCC Consultation, we consider that, in the absence of appropriate *ex ante* regulation, there is a relevant risk of adverse effects arising from

[391] Sections 4, 5, and 7, May 2015 BCMR Consultation.

BT fixing and maintaining some or all of its prices for the specific services we propose to include in the proposed price controls in the relevant CISBO and TISBO wholesale markets at an excessively high level.

Promoting efficiency

10.60 We consider that each of the proposed price controls is appropriate for the purpose of promoting efficiency.

10.61 As explained in Section [3], in setting the proposed price controls (in the form of a glide path with a CPI-X) BT is encouraged to achieve greater productive efficiency in providing wholesale services. This is achieved by allowing BT to keep any super-normal profits that it earns within the defined period by reducing its costs over and above the efficiency gains we have assumed in setting the proposed charge control.

10.62 We also consider that our proposed price controls would promote efficiency because, amongst other things:

- by ensuring BT cannot price excessively and by bringing charges more into line with forecast costs, each of the proposed price controls would increase allocative efficiency;[392]
- each of the proposed price controls would allow BT to earn a reasonable rate of return (the cost of capital) if it is efficient;
- we provide BT with the flexibility to change its prices to meet the necessary demand conditions by recovering common costs in the most efficient manner across the proposed groups of services (subject to any relevant sub-caps);
- by proposing broad Ethernet and TI baskets, we encourage efficient migration from the legacy services within these baskets; and
- by requiring BT to ensure that the differences in EAD and EAD LA prices reflect differences in incremental costs, we ensure that CPs choice between the two products is productively efficient.

Promoting sustainable competition and conferring the greatest possible benefits on end-users

10.63 We also consider that each of the proposed price controls would be appropriate to promote sustainable competition and to confer the greatest possible benefits on end-users of public electronic communications services.

10.64 In particular, each of the proposed price controls would prevent excessive pricing and, by applying at the wholesale level, would promote sustainable retail competition which we consider is likely to confer the greatest benefits on end-users of public electronic communications services. We have identified the appropriate services to be subject to price controls in the May 2015 BCMR Consultation. The proposed price controls would aim to bring BT's charges for these services in line with BT's costs of provision by the end of the control period, and would also enable other operators to

[392] When prices better reflect the underlying costs of production, allocative efficiency is enhanced. Meeting demand at cost-reflective prices will result in resources being allocated to the goods or services that consumers value most.

compete using these services on this basis. Competition will ensure benefits for end-users in terms of choice, price, quality of service and value for money.

10.65 Further, the efficiency savings that we refer to in the sub-section above, should, in the longer term, be passed onto consumers through reductions in prices, either as a result of competition or through subsequent price controls.

10.66 Some of our proposed price controls apply to baskets, therefore we have proposed appropriate safeguards to ensure that BT does not use the pricing flexibility offered to it in a way that would harm competition (see Sections [5-7]).

Investment

10.67 When proposing the price controls we have also taken into account the need to ensure BT has the incentives to invest and innovate where it is efficient to do so.

10.68 In particular, amongst other things:

- in modelling BT's costs for the proposed price controls on wholesale leased lines services and in considering how these will change over time, we have included BT's efficiently incurred costs and built in a reasonable return on investment (see Sections [6,7 and 9]);

- we propose to use forms of price controls (based on incentive regulation rather than rate of return regulation) which encourage and reward productive efficiency (see Section [3]);

- we propose to adopt the anchor pricing approach for the proposed TI basket controls and the MEA approach for the proposed Ethernet basket controls, which allows BT the ability to recover its costs and provides incentives to invest in innovative and more efficient NGA technology (see Sections [6 and 7]]);

- in proposing the price controls for Ethernet, we aim to ensure BT is able to recover its costs by uplifting the forecast costs to take into account both the cannibalisation of active circuits by the proposed dark fibre remedy and the implementation and development costs of the proposed dark fibre remedy; and

- we propose to base our cost forecasts on BT's costs of providing wholesale leased lines services rather than those of another operator, which encourages investment by other operators where it is efficient, i.e. when other operators are able to operate at the same or lower cost than BT.

10.69 We consider that each of the proposed price controls strikes a good balance between ensuring BT's charge are not excessive and ensuring appropriate incentives for investment and innovation.

<u>We have considered the tests under section 47 of the Act</u>

10.70 Any SMP condition must also satisfy the tests set out in section 47 of the Act, namely that it must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;

- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate as to what it is intended to achieve; and
- in relation to what it is intended to achieve, transparent.

10.71 We consider these tests are satisfied for the proposed price controls. We set out below some of the specific reasons for considering that each of the tests in section 47 is satisfied. However, this should be read in conjunction with our more detailed analysis set out (in particular) in sections 5, 6, 7, 9 and 10 of this document.

The proposed SMP condition is objectively justifiable

10.72 As set out above, in the absence of any price control, BT could set excessive charges that would have an adverse impact on both the ability of companies to compete in the downstream provision of services and on consumer choice and value for money. Our proposed price controls have been designed to address this risk while allowing BT the ability to recover its costs, including a reasonable return on investment. Additionally, we have reviewed each service within the markets so that we have introduced an appropriate level of control for individual services where appropriate.

10.73 As a result of our analysis set out in this document we consider the proposed SMP condition would be objectively justifiable.

The proposed SMP condition does not discriminate unduly

10.74 We are satisfied that each of the proposed price controls would not discriminate unduly against particular persons or a particular persons, because any CP (including BT itself) will be able access the services at the charge levels set by the proposed price controls.

10.75 We consider that the proposed price controls do not discriminate unduly against BT as the controls seek to address BT's market position, including its incentive and ability to set excessive charges for services falling within the scope of the proposed price controls.

The proposed SMP condition is proportionate

10.76 We are satisfied that the proposed price controls are proportionate because they would apply to an appropriate set of charges within those markets where we have identified BT as having SMP. The proposed price controls are focused on ensuring that there are reasonable prices for those access services, which are important to competitive downstream markets.

10.77 The price controls allow for BT to make a reasonable return on investment and provide BT with the incentives to invest and develop its network. Moreover, the proposed maximum charges that BT would be allowed to set over the period of the charge controls have been formulated using information on BT's costs and a consideration of how these costs will change over time.

10.78 We therefore consider that each of the proposed price controls for wholesale leased lines services are proportionate in that they do not, in our view, impose controls on

the prices that BT charge that go beyond what is required to achieve the aim of addressing BT's ability and incentive to charge excessive prices for these services.

The proposed SMP condition is transparent

10.79 We consider that each of the proposed price control SMP conditions is transparent in relation to what it is intended to achieve. The aims and effect of each of the proposed price controls are set out in this consultation. The proposed text of the SMP conditions has been published with this consultation. We have also set out the likely impact of the proposed price controls on charges for the duration of the control.

We have considered sections 3 and 4 of the Act

10.80 We consider that each of the proposed price controls are consistent with our duties under sections 3 and 4 of the Act for the reasons set out in this section, and in this consultation as a whole.

10.81 We consider that each of the proposed price controls will, in particular, further the interests of citizens and of consumers in relevant markets by the promotion of competition in line with Section 3 of the Act.[393] In particular, each of the price controls seek to ensure the availability of electronic communications services, priced at an appropriate level, throughout the UK. In proposing each of these price controls, we have had regard to the desirability of promoting competition in relevant markets, the desirability of encouraging investment and innovation in relevant markets and the desirability of encouraging the availability and use of high speed data transfer services throughout the UK.

10.82 We have taken into account further objectives, including ensuring that services are available at charges that are reasonably related to the efficient costs of supply (preferably as a result of effective competition) and investment and innovation (namely, the objective of promoting efficient investment in the development of new and innovative services by BT and other CPs).

10.83 In line with Section 4 of the Act, we consider that each of the proposed price controls will, in particular, promote competition in relation to the provision of electronic communications networks and will encourage the provision of network access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers.

10.84 Finally, in performing our duty to further the interests of consumers, we have also had regard in proposing the price controls, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.

Legal tests relating to very high CISBO safeguard cap

10.85 In the following paragraphs we set out why we consider that the proposed safeguard cap on very high CISBO services meets the tests of the Act.

Powers under sections 87 and 88 of the Act

[393] Whilst our market analysis has shown the relevant wholesale TISBO market is declining, we consider it appropriate and desirable to continue to further the interests of citizens in relation to communication matters and the interests of consumers in the downstream retail markets by promoting competition in the relevant wholesale TISBO market.

10.86 We are proposing a charge control in the form of a safeguard cap of CPI-CPI to BT as an SMP condition under section 87(9) of the Act with regard to very high CISBO services in the wholesale CISBO market in the Rest of the UK excluding the Hull area.

10.87 We consider that the proposed SMP condition would satisfy the tests set out in Section 88 of the Act. As a result of our market analysis, in particular our assessment in Section 7 of the May 2015 BCMR Consultation, we consider the relevant risk of adverse effects arising from price distortion in accordance with section 88 is the risk that BT might fix and maintain its prices for very high CISBO services in the CISBO market at an excessively high level. Therefore the specific points set out below should be read in conjunction with the more detailed analysis in Section 7 of the May 2015 BCMR Consultation and Section 6 of the June 2015 LLCC Consultation.

Promoting efficiency

10.88 We consider that the setting of the SMP condition is appropriate for the purpose of promoting efficiency. By preventing BT from raising prices for very high CISBO services, the safeguard cap would provide protection against excessive pricing during the period before the dark fibre remedy is established and also afterwards if competition based on the dark fibre remedy fails to constrain prices as anticipated.

10.89 Furthermore, in implementing a safeguard cap we have taken into account competition and investment incentives, which we consider would provide dynamic efficiency benefits to consumers.

Promoting sustainable competition and conferring the greatest possible benefits on end-users

10.90 We consider that the setting of the SMP condition is appropriate to promote sustainable competition and to confer the greatest possible benefits on end-users of public electronic communications services.

10.91 A safeguard cap would help promote sustainable competition and ensure benefits to consumers. As the safeguard cap would apply to each and every charge, it would also protect customers of CISBO services who may face less competition.

Investment

10.92 In setting the safeguard cap of CPI-CPI we have also taken into account the need to ensure BT has the appropriate incentives to invest and innovate.

10.93 The requirement under the safeguard cap not to increase prices for very high CISBO services in nominal terms is consistent with the objective of providing BT with incentives to invest and innovate. The expected general trend for very high CISBO services is for continued growth resulting in expected lower unit costs. Therefore, if the safeguard cap were binding, it would provide a fairly conservative path for required price reductions in real terms.[394] The safeguard cap would also be fixed for the duration of the charge control period, so this would provide BT with incentives to invest and innovate to bring about additional efficiency savings.

10.94 We have considered the tests under section 47 of the Act

[394] Given forecast positive price inflation over the charge control period, the CPI-CPI price cap would result in price reductions in real terms

10.95 We consider the tests set out in section 47 of the Act are satisfied.

The proposed SMP condition is objectively justifiable

10.96 We consider the SMP condition to be objectively justifiable. In the May 2015 BCMR Consultation, we set out our proposal that BT has SMP for CISBO services in the Rest of the UK excluding the Hull area. On this basis, we consider it necessary to impose some form of charge control on BT's services to address the competition problems arising from such SMP. However, in view of the potentially greater prospects for competition and infrastructure investment for very high CISBO services (than lower bandwidth CISBO) and in view of our proposal that the dark fibre remedy should provide the primary constraint on prices for very high CISBO during the latter part of the control period, we consider that a less constraining control than for lower bandwidth services, in the form of a safeguard cap is objectively justifiable.

The proposed SMP condition does not discriminate unduly

10.97 The safeguard cap will not discriminate unduly against a particular person or particular persons because any CP (including BT itself) can access the services based on charges set up to the maximum permitted by the safeguard cap. The charges are set to ensure a fair return and that charges are level for all customer groups and the safeguard caps apply to each and every very high CISBO service. Further, we consider that the SMP condition does not discriminate unduly against BT as the controls address BT's market position, including its ability and incentive to set excessive charges for these services.

The proposed SMP condition is proportionate

10.98 We consider that the SMP condition is proportionate as it seeks to achieve a balance between addressing the risk of BT pricing excessively by preventing BT raising prices, but also takes into account the potentially better prospects for competition and infrastructure investment in relation to very high CISBO services. It also takes account of our intention that the dark fibre remedy should provide the primary constraint on very high CISBO prices during the latter part of the control period.

10.99 For the reasons set out above, therefore, we consider the SMP condition is:

- appropriate to achieve the aim of addressing, for very high CISBO services, BT's ability and incentive to raise prices;
- necessary in that it does not, in our view, impose controls on the prices for very high CISBO services that BT may charge that go beyond what is required to achieve the aim of addressing BT's ability and incentive to raise prices;
- in our view, the least onerous of the options set out above whilst addressing, for very high CISBO services, BT's ability and incentive to raise prices; and
- such that it does not, in our view, produce adverse effects which are disproportionate to the aim pursued.

The proposed SMP condition is transparent

10.100 Finally, for reasons discussed above, we consider the SMP condition is transparent, as its aims and effect are clear. The proposed text of the SMP condition is published in this consultation.

We have considered sections 3 and 4 of the Act

10.101 We also consider that the SMP condition furthers our duties under sections 3 and 4 of the Act.

10.102 For the reasons set out above, we consider that the SMP condition would further the interests of citizens and further the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act. Further, we consider that, in line with section 4 of the Act, a price control obligation in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of network access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers.

10.103 We consider the SMP condition will, together with our other charge controls set out in this consultation, secure the availability throughout the United Kingdom of a wide range of electronic communications services.

10.104 We have also had regard in implementing the SMP condition, in particular:

- the desirability of promoting competition in the relevant market;
- the desirability of encouraging investment and innovation in the relevant market; and
- the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.

10.105 Finally, in performing our duty to further the interests of consumers, we have also had regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money

We have taken into account the EC Leased Lines Pricing Recommendation

10.106 The Leased Lines Pricing Recommendation relates to pricing aspects of wholesale leased lines part circuits and includes recommended EC Price Ceilings for leased line part circuits to *"inform and guide a national regulatory authority ("NRA") as to how to apply the best current practices in leased lines provision when devising regulatory remedies for leased line markets that are not effectively competitive in their territory".*[395]

10.107 We have taken utmost account of the Leased Lines Pricing Recommendation when developing our price control proposals. The EC Price Ceilings are based on prices for leased lines part circuits from Member States in June 2004. Since then, however, both prices and costs have changed.

10.108 Therefore, we consider that the RFS data (as adjusted by Ofcom) is more relevant in setting prices for the next charge control period and that, given the changes in market conditions, the use of the EC Price Ceilings could result in prices that diverge from the efficient cost of provision. By using up-to-date cost accounting data from BT's RFS and other relevant inputs and assumptions, we consider that we have ensured that prices are at an efficient level.

[395] Explanatory Memorandum to the Leased Lines Pricing Recommendation, page 6.

We have taken into account the BEREC Common Position

10.109 In formulating our proposed price controls discussed above, we have also taken utmost account of the BEREC Common Position including BP30, BP31 and BP32 which appear to us to be particularly relevant in this context.[396] We consider that our proposals are consistent with the best practice set out in the BEREC Common Position.

Consultation questions

The questions in sections 5 to 9 seek views on the substance of our proposals and therefore are not repeated here.

Question 10.1: Do you agree with our proposals for implementation of the proposed new charge controls and for ensuring compliance with the proposed new charge controls. If not, what alternative would you propose and why?

[396] BEREC Common Position.

Section 11

Regulatory Financial Reporting

Introduction

11.1 In this Section we set out our views on what specific cost accounting requirements are appropriate to complement the pricing remedies as specified in the May 2015 BCMR Consultation and the June 2015 LLCC Consultation.

11.2 We set out our proposal in the May 2015 BCMR Consultation to impose cost accounting and accounting separation remedies on BT and we summarise recent changes to BT's Regulatory Financial Reporting. We then set out our analysis and proposals.

11.3 First, we summarise the main adjustments we propose to make to BT's reported financial data and consider if and how these adjustments should be reflected in BT's Regulatory Financial Reporting. Specifically, for consistency with regulatory decisions, we:

- identify the adjustments that we propose should be reflected in BT's RFS;
- for those adjustments that should be included in BT's RFS, we propose requirements specifying how this should be done; and
- for those adjustments that we propose should not be reflected in BT's RFS, we consider if they should be reflected in the Adjusted Financial Performance Schedules.

11.4 Second, we set out the regulatory reporting requirements that we propose to impose on BT for wholesale leased lines services. In particular, we set out why we need this information and what we propose to be provided.

11.5 Third, we set out the need for compliance information and other requirements.

Background

11.6 In the May 2015 BCMR Consultation we set out our reasoning and proposal to impose cost accounting and accounting separation requirements on BT in each of the wholesale leased lines markets in which we propose that it has SMP.[397] These include new SMP conditions which implement the changes to the framework for BT's Regulatory Financial Reporting introduced by the May 2014 Regulatory Reporting Statement.

11.7 In light of the fact that any specific cost accounting requirements are likely to relate to our pricing remedies, in the May 2015 BCMR Consultation we say that our proposals on specific cost accounting requirements would be set out in this consultation. In the May 2015 BCMR Consultation we also note that such proposals may relate to: (i) requirements for consistency with regulatory decisions and the RAV; (ii) requirements for additional reporting of information relating to BT's adjusted financial performance;

[397] Paragraphs 8.133-8.144, May 2015 BCMR Consultation.

and (iii) requirements for preparation, delivery, publication, form and content of BT's RFS.

11.8 We discuss these requirements below.

Recent developments in BT's Regulatory Financial Reporting

11.9 In the May 2014 Regulatory Reporting Statement and the March 2015 Directions Statement, we explained that Regulatory Financial Reporting should, as far as possible, be consistent with our regulatory decisions as set out in Regulatory Accounting Principle number four.[398] In general terms, we would expect regulatory decisions to be reflected in the RFS unless we consider that there were good reasons not to.

11.10 In the May 2014 Regulatory Reporting Statement and the March 2015 Directions Statement, we also explained that we do not consider that the requirement for consistency meant that all regulatory decisions must be reflected in the RFS. For example, when we set prices, we may include adjustments to cost calculations that do not strictly reflect BT's costs (for reasons that we disclose and consult upon). Also, attempting to model the impact of some adjustments, such as steady state valuation adjustments, and how they might uplift costs in later years, would require BT to make difficult judgements about how we might approach these costs on an ongoing basis.

11.11 In the March 2015 Directions Statement, we noted that if not all regulatory decisions were reflected in the RFS, differences could arise between the reported view of BT's financial performance and the view we took when making regulatory decisions.[399] We therefore decided that BT must prepare the Adjusted Financial Performance Schedules as part of its Regulatory Financial Reporting to show the impact of certain regulatory decisions not reflected in the RFS.[400]

11.12 We also said that some regulatory decisions should not be reflected in either the RFS or the Adjusted Financial Performance Schedules.

11.13 In the May 2014 Regulatory Reporting Statement we said that when the Regulatory Accounting Guidelines are introduced in 2016/17, they will include guidance on what the consistency principle means in practice. We said that in the interim, in order to enable BT to produce its 2014/15 and 2015/16 RFS consistent with the Regulatory Accounting Principles, we will direct BT as to the specific reporting requirements arising from regulatory decisions.[401] We therefore set out below the proposed requirements for BT which will be incorporated in the Regulatory Accounting Guidelines when they are published.

[398] Annex 3, March 2015 Directions Statement.
[399] Paragraph 3.36, March 2015 Directions Statement.
[400] Each market review level is composed of individual SMP markets. The market review levels and the component SMP markets for which BT has Regulatory Financial Reporting requirements are set out in Section 1 of BT's RFS.
[401] Paragraphs 3.36–3.37, May 2014 Regulatory Reporting Statement.

Our proposals on the requirement for consistency with regulatory decisions

Proposed Charge Control adjustments

11.14 To inform our proposals on the charge controls set out in this consultation, we have proposed various adjustments to the cost information reported in BT's 2013/14 RFS, which we use as our base year. Detailed explanations and justifications are set out in Annex 6. We have summarised them in Table 11.1 below.

11.15 In relation to the valuation of Access Copper and Duct assets on a RAV basis, one of the proposed SMP conditions in the May 2015 BCMR Consultation would, if adopted, require BT to prepare the Regulatory Financial Statement on a RAV basis.[402] In the May 2014 Regulatory Reporting Statement we said that we would specify the methodology to determine the RAV when setting this SMP condition. The methodology to determine the RAV adjustment has been consistently applied since our statement on valuing BT's copper access across markets.[403] We do not therefore consider it necessary to consult on such methodology. We have also already specified this methodology for the Fixed Access and WBA markets in the March 2015 Directions Statement. If we decide to adopt this proposed SMP condition, we will specify the same requirement in a direction.

Table 11.1: Summary of our proposed base year adjustments

Adjustment	Description
a) Access cards	We have excluded the total cost of Access cards from all business connectivity services.
b) June 2015 Cost Attribution Review - errors	As part of the June 2015 Cost Attribution Review, we have identified significant errors which have an impact on business connectivity services. We have corrected those errors for modelling purposes and propose to adjust for the 2016 LLCC.
c) June 2015 Cost Attribution Review - General Overheads	As part of the June 2015 Cost Attribution Review, we propose that BT's current methodology should be broken down into smaller categories and alternative attribution bases used. For modelling purposes we have attributed General Overheads using PAC.
d) Cumulo	We have attributed Cumulo costs to business connectivity services using the same basis set out in the June 2014 FAMR Statement and March 2015 Directions Statement.[404]
e) Transmission	We have excluded the Ethernet Electronics costs from Ethernet services that had been previously recovered through connection

[402] Draft SMP condition 11.10.
[403] Ofcom, *Valuing copper access – final statement,* 18 August 2005, http://stakeholders.ofcom.org.uk/binaries/consultations/copper/statement/statement.pdf (August 2005 Valuing Copper Access Statement).
[404] Paragraphs 4.63-4.67, March 2015 Directions Statement.

equipment	charges.
f) Restructuring costs	We have excluded the costs relating to one-off restructuring charges.
g) Credit note	We have corrected a miss posting of refunds payable.
h) TI volumes	We have corrected the cost impact of BT misstating TI volumes.
i) QoS resource uplift	We made an adjustment to reflect the additional resources required to improve Ethernet provisioning times.
j) SLG payments	We have adjusted BT's SLG payments to reflect those that it would incur assuming its performance is consistent with our QoS adjustment.

Source: Ofcom

Identification of proposed adjustments and proposed treatment within the RFS

Our approach

11.16 We explained in the March 2015 Directions Statement that the identification of proposed adjustments that should or should not be reflected within Regulatory Financial Reporting to achieve consistency and that should or should not be reflected within the Adjusted Financial Performance Schedules is a matter for our judgement and should be considered on a case by case basis.

11.17 The starting point for our analysis is that we would expect to see a cost adjustment, made by us in our regulatory decisions, to be reflected in the RFS if it relates to the way BT's actual or incurred costs should be treated.

11.18 We said in the March 2015 Directions Statement that we would not expect to see a cost adjustment reflected in the RFS if:

- the adjustment has the effect of replacing BT's incurred costs with an alternative estimate of cost. In such case, we would expect to see the adjustment reflected in the Adjusted Financial Performance Schedules; and

- the adjustment has the effect of replacing BT's incurred costs with a value that is not based on BT's network (whether actual or estimated). In addition, we would not expect such an adjustment to be reflected in the Adjusted Financial Performance Schedules.

11.19 In addition, as part of this consultation we have considered that we would not expect to see a cost adjustment to be reflected in the RFS or the Adjusted Financial Performance Schedules if the adjustment has the effect of replacing BT's incurred costs with a value that is not based on BT's network and it is only made for forecasting purposes.

Our analysis

11.20 In order to determine whether the adjustments listed in Table 11.1 should be reflected in BT's RFS or Adjusted Financial Performance Schedules we have applied the approach set out above. We have set out our analysis in Table 11.2 below.

Table 11.2: Application of our approach to consistency with our proposed adjustments

Proposed adjustment	Does the adjustment have the effect of replacing BT's incurred costs with an alternative estimate of cost?	Does the adjustment have the effect of replacing BT's incurred costs with a value that is not based on BT's network (whether actual, estimated or for forecasting purposes)?
a) Access cards	No	No
b) June 2015 Cost Attribution Review - errors	No	No
c) June 2015 Cost Attribution Review - General Overheads	No	No
d) Cumulo	No	No
e) Transmission equipment	No	No
f) Restructuring costs	No	No
g) Credit note	No	No
h) TI volumes	No	No
i) QoS resource uplift	No	Yes
j) SLG payments	No	Yes

Source: Ofcom

Our proposal

11.21 In line with the approach set out above, we do not consider that there are any reasons not to reflect adjustments a)-h) in Table 11.2 in BT's RFS. We therefore propose that the RFS must include all of these adjustments.

11.22 We propose that BT should reflect adjustments a)-h) in the order presented above because some of the adjustments logically must follow others, whilst others have a cumulative effect on the RFS.

11.23 In Annex 7, we set out how we have calculated the adjustments we have made to BT's 2013/14 RFS base year data and we propose that BT must reflect the adjustments in its RFS on the same basis. We set out in Table 11.3 below our proposals on how they should be implemented in the RFS. In addition, we indicate if

BT has already proposed in its March 2015 Methodology Review[405] to make the adjustment in the 2014/15 RFS.

Table 11.3: Proposed requirements for the implementation of our proposed adjustments in the RFS

Proposed adjustment	Proposed requirements on treatment in business connectivity markets	Adjustment included in March 2015 Methodology Review?
a) Access cards	Access cards must not be allocated to business connectivity services that do not use them.	Yes
b) June 2015 Cost Attribution Review - errors	1. Apportion Core and Backhaul fibre costs on the basis of the bandwidth and the length of the fibre. 2. Apportion Access fibre costs in accordance with the proportion of fibres by circuit type. 3. Backhaul, Core, and Access duct, when utilised by 21CN fibre plant groups must be allocated to those 21CN fibre plant groups. 4. BT Wholesale transfer charges from non-core units that are general in nature and that relate to services in residual markets must not be allocated to business connectivity services.	Part (error three only). As we explain in the June 2015 Cost Attribution Review, BT has confirmed that it will correct these errors.
c) June 2015 Cost Attribution Review - General Overheads	BT must attribute General Overheads on the basis smaller cost categories that reflect the underlying nature of those cost categories.	No
d) Cumulo	Cumulo costs and rebates must be attributed as set out in the March 2015 Directions Statement.	Yes (although BT's method differs from the method that Ofcom uses and will need amendment)
e) Transmission equipment	BT must exclude the MCE and depreciation cost of Transmission assets deployed prior to 2010/11 from business connectivity services.	No
f) Restructuring costs	Group restructuring costs, must not be recovered from business connectivity services.	No

[405] BT, *Change Control Notification in accordance with SMP Condition 21 of Ofcom's Regulatory Financial Reporting Final Statement published on 20 May 2014*, 31 March 2015, http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2015/ChangeControlNotification-31March2015.pdf (March 2015 Methodology Review).

g) Credit notes	BT must allocate SLG credit notes against the income to which these SLG credit notes relate to and not SLG payments.	No (although, as this is an 'error', it is likely BT will correct it)
h) TI volumes	BT must separately identify and separately account for Featurenet TI volumes and costs.	No (although, as this is an 'error', it is likely BT will correct it)

Source: Ofcom, June 2015 LLCC Consultation, Annex 7

11.24 In line with our approach set out above, we do not propose that the adjustments set out in items i) and j) of Table 11.2 should be reflected in either the RFS or the Adjusted Financial Performance Schedules. We have set out our reasons for this in Table 11.4 below.

Table 11.4: Adjustments proposed not to be included in either the RFS or the Adjusted Financial Performance Schedules

Proposed adjustment	Justification
i) QoS resource uplift	The adjustment we make in our 2015 base Year Model is our estimate of the cost of implementing BT's Quality of Service improvement plan. The 2014/15 RFS will include the actual costs of implementing the Quality of Service improvement plan; therefore no estimate of the adjustment is required.
j) SLG Payments	The SLG cost adjustment in our 2015 Base Year Model is our estimate of the impact on SLG costs of implementing BT's Quality of Service improvement plan. The 2014/15 RFS will include the actual costs of SLGs relating to the improved level of service arising from the implementation of BT's Quality of Service improvement plan, therefore no estimate of the adjustment is required.

Source: Ofcom

11.25 We have included the proposed direction which implements our proposals on the requirement for consistency with regulatory decisions (Consistency with Regulatory Decisions Direction) in Annex 15.[406]

Regulatory Reporting Requirements

Background

11.26 We consider that it is important that BT maintains appropriate and reliable accounts that capture information on an ongoing basis relevant to its provision of wholesale leased lines services. As we concluded in the May 2014 Regulatory Reporting Statement, the published RFS should provide reasonable confidence to stakeholders

[406] The proposed requirements in relation to the correction of the errors identified in June 2015 Cost Attribution Review will only be captured in the final direction in the event that these errors have not been corrected in the 2014/15 RFS.

that the SMP provider has complied with its SMP conditions and add credibility to the regulatory financial reporting regime.[407]

11.27 In addition, we consider that it is important that BT provides additional information that will enable the monitoring of compliance with, and the effectiveness of, the remedies imposed in the May 2015 BCMR Consultation, including pricing remedies. This information will provide transparency on how BT has attributed costs across services and mitigates against the risk of double recovery of costs or that costs might be inappropriately attributed to particular services. We consider that this information will also be a useful source of information and will serve as an anchor point to reconcile other data, in order to support our decision making in relation to wholesale leased lines markets.

11.28 For these reasons, we propose to require the additional reporting set out below, both publicly and privately.

Public information

11.29 In accordance with our decision in the May 2014 Regulatory Reporting Statement, which set out that cost, volume and revenue information within the RFS should be provide the appropriate level of detail and make clear in which basket regulated products are reported, we propose that:

- BT must disclose the revenue and FAC costs for business connectivity markets;
- BT must disclose the revenue, volume, average price and FAC for regulated wholesale leased lines services at the level they are regulated (i.e. at the basket, sub-basket level and individual service);
- BT must disclose the calculation of FAC based on network component costs and usage factors for regulated wholesale leased lines services at the level they are regulated (i.e. at the basket, sub-basket level and individual service); and
- the information above should be produced where applicable as separate reports for i) internal and external circuits, and ii) rentals and connections. Rentals should also be separated by charging elements, i.e. separate information provided for local ends, links, terminating segment charge and elements currently known as regional trunk. Where allowable discounts have been included, BT must separately disclose the discounted and undiscounted volumes and revenues.

Additional public information

11.30 We propose to require BT to publish the same level of information for a number of individual services at the service level. Given the broad baskets and limited sub-baskets for leased lines services proposed in this consultation, the information that we propose is published above will only provide stakeholders with basket and sub-basket information. We consider that stakeholders should be provided with information about individual services, because this will enable them to observe cost, volume and revenue data for the services that they purchase and be able to understand the relativity of the services within the baskets and sub-baskets. It is important that stakeholders are able to scrutinise the regulatory accounts in order to understand how BT is recovering its costs, are able to comment on the returns that

[407] Paragraph 2.41, May 2014 Regulatory Reporting Statement.

BT is making and also consider the impact of regulation on BT for the services they purchase. This in turn will provide stakeholders with confidence that BT has complied with its regulatory obligations and enable them to assess the effectiveness of the remedies we have imposed for the services that they purchase.

11.31 We have, therefore, identified services that account for a significant proportion of Ethernet and TI basket revenues as well as those that are more likely to be purchased by customers that are external to BT, as these services are likely to be more important to stakeholders.

11.32 We propose that BT should publish information, for the following CISBO Non-CLA services:

- Wholesale extension services 10Mbit/s;
- Wholesale extension services 100Mbit/s;
- Wholesale extension services 1000Mbit/s;
- Wholesale extension services above 1000Mbit/s;
- Backhaul extension services up to and including 1000Mbit/s;
- Backhaul extension services above 1000Mbit/s;
- EAD Local Access 10Mbit/s;
- EAD Local Access 100Mbit/s;
- EAD Local Access 1000Mbit/s;
- EAD Other 10Mbit/s;
- EAD Other 100Mbit/s;
- EAD Other 1000Mbit/s;
- EBD 1000Mbit/s;
- EBD 10000Mbit/s; and
- Optical services.

11.33 We propose that BT should publish information for the following low bandwidth TISBO services:

- Partial and Private Circuits 64kbit/s;
- Partial and Private Circuits 2Mbit/s;
- Radio Backhaul Service 64kbit/s;
- Radio Backhaul Service 2Mbit/s; and
- Point of Handover.

11.34 For each of the services listed above, we propose that:

- BT must disclose the revenue, volume, average price and FAC;
- BT must disclose the calculation of FAC based on network component costs and usage factors;
- the information above should be produced where applicable for i) internal and external circuits, and ii) rentals and connections. Rentals should also be separated by charging elements, i.e. separate information provided for local ends, links, terminating segment charge and elements currently known as regional trunk. Where time limited discounts and three year term products have been included, BT must separately disclose the discounted and undiscounted volumes and revenues; and
- BT must provide information on any new services that will substantially or wholly replace an existing service that is listed above, e.g. EAD 10,000Mbit/s.

11.35 We also propose that BT set out the LRIC for the EAD and EAD LA services listed in paragraph 11.32 above in the market summary for CISBO Non-CLA. This will ensure that CPs are able to monitor the requirement for the differential between EAD and EAD LA services as set out in paragraphs 10.18-10.35 of the May 2015 BCMR Consultation.

11.36 Finally, we propose a specific requirement on how ECC credits are recorded and reported within BT's Regulatory Financial Reporting. As set out in Section 9, BT does not separately account for the cost of ECCs. BT's current approach when reporting ECC costs in the RFS[408] is to assume that costs equate to ECC revenue less the regulated rate of return, making accurate identification of ECC costs problematic. We propose to require BT to separately account and report ECCs in the market summary for the CISBO Non-CLA in a manner compliant with the proposed Regulatory Accounting Principle number five[409] at the level of the proposed remedy.

Private information

11.37 We propose that additional information be provided to us in private.[410] We set out the schedules and our reasoning for them below:

- the first schedule (Detailed BCMR Services) should set out the revenues, volumes and FAC on a CCA basis of any other wholesale leased lines service not publically disclosed where the revenue from this service is above £1m. The revenues and costs should, in total, be reconciled to the revenues and costs included within the publicly reported totals for the business connectivity markets. This schedule will ensure that Ofcom has sufficient information to identify

[408] As can be seen in page 77, BT's 2013/14 RFS.
[409] According to this principle BT's costs should be "*attributed in accordance with the activities which cause the...costs to be incurred, or the assets to be acquired*…" (Annex 3, May 2014 Regulatory Reporting Statement).
[410] In its submission to the April 2014 BCMR CFI [✂] expressed its general concern about greater disclosure of costs. We note that Ofcom has published the results of its general review of the regulatory reporting requirements looking across all the regulated markets. These are set out in the May 2014 Regulatory Reporting Statement in which we set out our views on what we see as the purpose of financial reporting in the future in light of market developments, the current requirements and our approach to improving the framework.

services that account for a significant proportion of Ethernet and TI basket revenues;

- the second schedule (Detailed BCMR Service Component FACs) is proposed to set out the calculation of FAC based on component costs and usage factors for all services reported under the first schedule. The fully allocated service unit costs should reconcile to those given in the first schedule. As with schedule one, this schedule will ensure that Ofcom has sufficient information to identify services that account for a significant proportion of Ethernet and TI basket revenues;

- the third schedule (BCMR EAD/EAD LA 1Gbit/s component LRIC and FAC) will set out the LRIC and FAC by component for EAD 1Gbit/s and EAD LA 1Gbit/s. This schedule will ensure monitoring of BT's implementation of the proposed dark fibre remedy as set out in Section 9 of the May 2015 BCMR Consultation and Section 8 of this June 2015 LLCC Consultation; and

11.38 In addition, we propose that BT continues to provide a schedule (Detailed Service LRICs) where it sets out DLRIC and DSAC data for the wholesale leased lines services listed in paragraphs 11.32-11.33 above. This schedule will ensure that we are able to assess whether our SMP conditions continue to address the underlying competition issues and enable us to make informed regulatory decisions.

11.39 We have included the proposed directions which implement our proposals on the regulatory reporting requirements for wholesale leased lines services (Direction proposing requirements relating to the preparation, audit, delivery and publication of the RFS, and Direction proposing requirements relating to the form and content of the RFS) in Annex 15.

Compliance Information

11.40 We propose that BT must supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance with the charge control as described in more detail within the 'General Provisions and interpretation' section of each of the SMP conditions. This information must reconcile to the RFS. We also propose that BT must publish a non-confidential version of the data on its website.

Other requirements under the May 2014 Regulatory Reporting Statement

11.41 In the May 2014 Regulatory Reporting Statement we made policy decisions in relation to the following requirements, which we said would be implemented by way of directions:

- new Regulatory Accounting Principles;

- the methodology to determine the RAV adjustment;

- transparency requirements for the purposes of preparing and maintaining the accounting records, the Accounting Methodology Documents and the RFS;

- requirements in relation to audit, form of the FPIA opinion and form of PPIA opinion for RFS;

- requirements in relation to reconciliation report and accompanying audit opinion;
- requirements in relation to preparation, delivery, publication, form and content of the RFS (in addition to those which we have described above); and
- requirements in relation to network components.

11.42 We said in the May 2014 Regulatory Reporting Statement that these decisions should be implemented across all regulated markets, including reporting of markets considered as part of the BCMR and narrowband market review.[411] The above requirements have either been subject to consultation or we did not consider it necessary to consult.[412] We therefore propose to issue directions necessary to implement the above policy decisions in the 2016 BCMR Statement.

Legal tests

11.43 We have considered our proposals set out in the proposed Consistency with Regulatory Decisions Direction against the tests set out in section 49(2) of the Act and for all of the reasons set out above, we consider that they are:

- objectively justifiable because we have established in the May 2014 Regulatory Reporting Statement the need for the RFS to be consistent with regulatory decisions and the proposed Direction specifies the regulatory proposals which we have made in this consultation with which the RFS need to be consistent. The proposed Direction also provides BT with clarity as to how our proposals made in this consultation, if they are adopted, should be reflected in the RFS; and
- not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not proposed that it should ensure its RFS are consistent with our regulatory decisions;
- proportionate because the proposed Direction in which we specify the adjustments with which BT's RFS need to be consistent, is no more than is required to ensure consistency with our proposals. Further, BT retains an important role in determining the basis of preparation of the RFS; and
- transparent because it is clear that the intention of the proposed Direction is to ensure that BT's RFS are consistent with our proposals.

11.44 We have considered whether the proposed Direction setting requirements relating to the preparation, audit, delivery and publication of the RFS, and Direction setting requirements relating to the form and content of the RFS meet the tests set out in section 49(2) of the Act. For all of the reasons set out above, we consider that they are:

- objectively justifiable because the proposed Directions reflect the proposals in the May 2015 BCMR Consultation, including the proposed pricing remedies. Our proposals concerning the additional information to be provided both in public and in private seek to ensure that stakeholders have sufficient information about the

[411] Paragraph 1.21, May 2014 Regulatory Reporting Statement.
[412] For example, we did not consider it was necessary to consult on the methodology to determine the RAV adjustment because this methodology had been consistently applied since our August 2005 Valuing Copper Access Statement.

products and services they purchase to provide them with reasonable confidence about BT's compliance with its SMP conditions and we have sufficient information necessary to carry out our functions;

- not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not established the need for KCOM to provide further information and in any event we are not proposing any pricing remedies on KCOM;

- proportionate because the proposed Directions are no more than is required in order to ensure the effectiveness of the proposals in the May 2015 BCMR Consultation, including proposed pricing remedies and ensures that Ofcom and stakeholders are provided with a sufficient level of information, and does not extend beyond these; and

- transparent because it is clear that the intention of the proposed Directions are to make sure that the RFS remain fit for purpose and that Ofcom and stakeholders are provided with a sufficient level of information.

11.45 We have also considered how our proposals meet the tests in Section 3, 4 and 4A of the Act.

11.46 Our proposals concerning consistency with regulatory decisions are designed to ensure that the RFS are aligned with Ofcom's regulatory decisions. They seek to ensure that proposals made in the May 2015 BCMR Consultation, including pricing remedies, are reflected in BT's accounts where appropriate. The proposals thereby seek to ensure the RFS remain relevant, thereby increasing transparency. Ultimately, this promotes competition.

11.47 Our proposals in relation to the regulatory reporting requirements for wholesale leased lines services seek to ensure that stakeholders have sufficient information about the products and services they purchase and we have sufficient information necessary to carry out our functions. The proposals therefore increase transparency, ultimately promoting competition.

11.48 In proposing these changes we have taken into account all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications.

11.49 In consequence Ofcom believes the proposed Directions meet the tests in Sections 3, 4 and 4A.

Consultation questions

Question 11.1: Do you agree with our proposals for BT's Regulatory Financial Reporting, including in particular:

a. the proposed Consistency with Regulatory Decisions Direction; and

b. the proposed Direction modifying requirements relating to the preparation, audit, delivery and publication of the Regulatory Financial Statements, and

Direction modifying requirements relating to the form and content of the Regulatory Financial Statements?

If not, what alternative would you propose and why?